HP Professional

SEPTEMBER 1994

- **BULLETPROOFING YOUR NETWORK**
- **INSITES: CUSTOMER SERVICE SUCCESS STORIES**
- **NEW COLUMN: STANDARDS & INTEROPERABILITY**

Business Recovery

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CIRCLE 122 ON READER CARD

See us at INTEREX, booth #649

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By George A. Thompson

Nobody plans to fail but many organizations do fail to plan when it comes to maintaining, protecting or recovering their business functions in the event of natural and unnatural disasters. Are you prepared?

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By Paula Jacobs and Deborah Schwartz

The increasing complexity of distributed networks makes it imperative that you identify and intercept potential security breaches.

COLUMNS

PRODUCT WATCH:

STRATEGIC DIRECTIONS:

HP Professional

Cover Illustration by Verlin Miller

*H*ewlett-Packard computer systems help General Mills crunch their delivery schedules. So you get your Wheaties even fresher.

"Not only is the HP 3000 open, but it's an excellent, easy-to-use transaction-processing system for business-critical operations."

— Mike Meinz,
General Mills, Information Systems

*T*he demand for Wheaties, Cheerios and other General Mills' products is huge. Which puts enormous demands on the company's distribution and inventory control systems.

They needed a way to deliver faster, while making sure each shipment was complete and contained only the freshest products. They solved the problem crisply by porting a UNIX-based warehouse management application to HP 3000 computers.

This is helping General Mills perform like a champion. The HP 3000s, located in all nine distribution centers, are managed remotely, without extra staff. And they provide near 100% uptime. Which takes the worry out of running critical applications.

If you need a faster way to market, call 1-800-637-7740, Ext. 7806 for a video case study. We think it will whet your appetite for more.

HEWLETT PACKARD

Up On The Roof

Do-It-Yourselfers Step Aside, But Check Your Wallets First

Glenn Osaka's recent appointment as general manager of HP's Professional Services Organization (PSO) would appear to solidify the importance of service in the computing industry, at least in HP's mind. After all, Osaka is not someone you want twiddling his thumbs.

Three years ago "Service" started to emerge as the buzz buck generator. The popular phrase was: "As hardware and even software become nothing more than a commodity, it will be the services offered that distinguishes one vendor from the other."

It sounded good then, but it was still a new and even frightening concept, at least in the MIS shop. However, with the reality of downsizing (the bad kind), producing less staff, less money and more responsibility per person, outsourcing and consulting is a logical solution. And service is becoming that major factor in the purchase decision.

So it seems the crystal ball gazers got one right. HP, IBM, Bell Atlantic, you name them, are all offering consulting services of some sort or another. From pre-site planning to complete system integration, from maintenance to upgrades. And each one has their own message. HP offers expertise in their product line while claiming general service providers, such as Bell Atlantic, are spread too thin across multiple platforms. Bell, however, sees it as offering you a choice and maintains it only hires those people with platform-specific experience.

I recently learned the importance of, or lack of, service when I decided to replace the roof on my home, myself. The first lesson I learned was service has a price. I could have contracted the job out, but I couldn't justify shelling out six grand for something "I could do myself." Of course, I never actually put a roof on before!

I can tell you now it was nothing like on *This Old House*. Yo Norm, you forgot to mention the 100 degree, 98 percent humidity weather, taking a nose dive and the back-break lugging of 72 eighty-pound bundles of shingles.

Doing it myself saved money, but it also forced me to become familiar with my roof and my home, and it gave me the guts to tackle other projects. If I can rip off my roof I can do anything, right? So was it worth it? In the end, I'm glad I did it. Would I ever do it again? Hey Norm.

Now you need to decide if you're Norm enough, or if you are like that guy on that other do-it-yourself show who makes his wife do all the work. So as more IS managers are forced to make do with less, look for continued growth in the service arena.

Speaking of growth, HP recently released its earnings report. Good news for all you HP watchers, and who isn't these days. The company reported a 28 percent increase in earnings for the 1994 fiscal year's third quarter.

Finally, while we're still on the subject of growing, this month *HP Professional* introduces a new column — Standards and Interoperability. Afterall, the beauty of standards is that there are so many to choose from. Check it out and let us know what your choices are.

By Charlie Simpson

Charlie Simpson

simpson@cardinal.com

The Heat Is Up

This summer, HP was busy turning up the heat on many different computing fronts.

Although the HP 3000 is seen by some as a yesterday's technology, Time Warner Cable (Stamford, Conn.) and Smith Gardner & Associates (Boca Raton, Fla.) don't think so. In fact, the HP 3000 will be on the forefront of tomorrow's technology — interactive TV — when Time Warner Cable's Full Service Network (FSN) begins a pilot operation in Orlando, Florida later this year.

When home shoppers place an order over the Time Warner Cable interactive network, an HP 3000 running Smith-Gardner's Mail Order and Cataloging System (MACS) will process and fill the orders in real time. "Because of the online real-time processing requirements of MPE/iX, it is better than anything else we could find," explains Lee LeFaivre, marketing director for Smith-Gardner.

After a customer chooses an on-screen item, the HP 3000/MACS combination will automatically verify the item is in inventory, confirm the order, and pick and ship the product to the customer. "We are able to handle from 100 up to 100,000 orders a day in real time," says LeFaivre. Last year, HP's Video Commu-

nication Division agreed to provide a "home media printer" for the FSN pilot. The core technology will come from its VidJet Pro, a professional quality video imaging device, which converts NTSC, PAL or SECAM video signals into a language understood by HP printers.

GETTING IMMERSED IN 3D

Speaking of interactivity, HP's Workstation Systems Division announced long-term technology and marketing agreements with Division Inc. (Bristol, United Kingdom) and Evans and Sutherland (E&S; Salt Lake City, Utah) to exploit opportunities in the 3D graphics market. It's all part of HP's Advanced Graphics Strategy which is setting its sights on the interactive, advanced visual analysis and virtual reality (VR) markets.

HP will OEM E&S' Freedom Series of graphics accelerators based on E&S' Velocity technology. Available in the fourth quarter of 1994, the Freedom Series accelerators are actually separate system boxes connected to HP 9000 Series 700 workstations via an HP Interface Card. The Freedom Series acts like a graphics "booster engine" providing vector and triangle performance over 3.5 million primitives.

But more importantly, says Kevin Borchert, graphics product marketing mananger for HP, is the availability of 3D APIs like PEXlib and OpenGL. OpenGL is Silicon Graphics Inc.'s (SGI) own API licensed for use to other vendors. According to Borchert, the platform is "geared toward the visual analysis space" for com-

panies using MCAD to visualize their prototypes in real time.

At the top rung of the HP Advanced Graphics ladder is its collaboration with Division, which will take HP into the Immersive VR market. VR is beginning to generate interest among heavy CAD users in automotive, aerospace and architectural companies. With Immersive VR, the user is an active participant in the virtual world.

Under the terms of the agreement, Division will act as an HP VAR in VR markets selling HP 9000 Series 700 workstations equipped with Division's ProVision 10 ($20,000), an EISA-based expansion card. According to Division, fully immersive systems ($36,000 to $100,000) based on Provision and HP 9000 Model 715 or 735 workstations can be ordered now for later delivery.

HP also has agreed to collaborate with Division to further develop PixelPlanes. Originally developed at the University of North Carolina (Chapel Hill, N.C.), PixelPlanes is the technology on which ProVision is based. The two-year program will focus on what will become known as PixelFlow and be based on PA-RISC architecture. Using massive parallelism techniques, "you'll ultimately be able to have one processor per pixel," says Bochert.

In addition, Division's dVISE and dVS VR authoring tools will be ported to HP workstations. Availability is scheduled for the fourth quarter 1994. Division, however, is not the only VR ISV for HP. Sense8 (Sausalito, Calif.) also announced that it is porting its WorldToolKit VR development environment to HP workstations.

HP PORTS IN AN OPEN MIGRATION STORM

Established in 1990 to assist Apollo Domain users moving to HP-UX after its acquisition of Apollo Computer, the Open Migration Program recently added Bluestone (Mount Laurel, N.J.), a privately-held consulting firm, to help Sun Microsystems customers move to HP-UX. The Open Migration Program already includes Accelr8 Technology's (Denver, Colo.) Open Software Solutions migration toolset for porting VAX/VMS UNIX platforms.

Bluestone markets UIM/X, a Motif-based GUI builder and db-UIM/X, a CORBA-compliant tool optimizing UIM/X for relational databases. "We are getting a lot of calls from Sun customers saying that they would like to move up to HP systems," says Cheri Zedick, Open Migration marketing manager.

Zedick suggests several reasons for the demand. "SPARC performance is behind the HP-RISC platform." And Zedick adds that Sun users are looking at two migrations — from SunOS to Solaris and from Solaris to Spec 1170, the COSE API. "A large portion of our technology is already Spec 1170-compliant," says Zedick.

YOU CAN HEAR A PIN DROP

An HP PA-RISC version of Processor Independent NetWare (PIN) is one announcement that HP *isn't* going to make this year. HP and Novell have jointly abandoned their NetWare for PA-RISC efforts.

"The announcement is much more significant for Novell," says Tom Kurcharvy of Summit Strategies (Boston, Mass.) who thinks that the idea of NetWare running on non-Intel hardware is a bit overblown. "UNIX, HP-UX and Microsoft's NT Advanced Server will play much more significant roles in the future," according to Kurcharvy.

HP is now focusing their PIN development on their Intel-based NetServer product line, according to Ray Mausling, program manager for NetWare operations. "Intel Pentium CPUs provide sufficient performance for file server applications," says Summit's Kurcharvy. And HP's Intel-based NetServers include server management software, which is a main differentiator in that segment of the market.

HP will continue to invest in and improve Portable NetWare which runs on top of HP-UX and also on the HP 3000 MPE platform. Portable Netware is targeted for OLTP environments explains Mausling. "We see them [Intel/NetWare and Portable NetWare] as complimentary products," says Mausling.

Mausling also noted HP's recent agreement with Intel to combine their respective CPU architectures as another reason for the change of heart. But he adds that HP and Novell "have a great relationship" and that "we will continue to work with them on other projects."

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thompson@cardinal.com

Solid-Statements

I read with interest the Product Watch article ["Solid Solutions From DES"] in the June 1994 issue. Having been involved with this technology for some years, I would like to offer the following comment:

That because the unit is capable of 17,000 I/Os per second, it would be reasonable to expect exceptional I/O rates on almost any system, at least 8,500 just half the quoted maximum.

I find . . . [this expectation] most troubling. It misleads the reader as to the effect this [solid state] technology can have on a system's I/O rate. The reader can logically conclude that incredible performance improvements are available. The ensuing disappoint-ment may lead people to dismiss the technology as one that promises a lot but delivers very little. While one cannot prevent over-committing in an advertisement, an article in a technical publication written by an independent third party, should not promulgate adver-tising hype.

The 17,000 I/Os per second claimed as the unit's capability cannot be achieved. No test, regardless of how skewed and biased its design, will produce results that approach this I/O rate. The number is derived from a calculation that assumes the product is attached to an infinitely fast computer which not only takes zero time for processing data, but also has zero SCSI bus access time and zero SCSI command overhead and all I/Os are no larger than 512 bytes.

Recently, Tony Fiorito wrote a report for *DEC Professional* about CMD's Hawk product, a SCSI stor-age server for DEC-, CI- or DSSI-based clusters. Both DES and Imperial solid-state disks were attached to the Hawk. The I/O rates of both products were within 1 percent of each other and the rates peaked at about 1,000 per second. This is 1700 percent less than the article indicated was possible. Even the auto industry, when issuing statements about gas mileage, is not so outrageous. By analogy, they would be claiming over 500 miles per gallon.

John Jory
Vice President of Sales & Marketing
Imperial Technology Inc.

It is neither HP Professional's nor its authors' mission to promulgate advertising hype. When reporting on technologies we often must rely on the honesty and accuracy of experts involved with that technology. HP Professional plans to investigate all claims on solid state technology in an in depth feature, slated for a future issue. — Charlie Simpson, Editor-in-Chief

Client-Server Clarification

I want to clear up any confusion your readers may have concerning statements included in Bill Sharp's Industry Watch article [July 1994 issue] in his coverage of the new HP 3000 Client-Server Integrators Program.
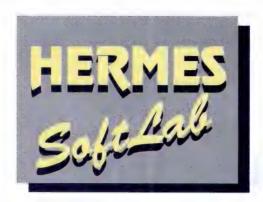
It is incorrectly stated that the new program allows "systems integrators to replace HP sales people for small- and medium-size customers." This is definitely not the case. The new program encourages integrators and HP sales people to work together as a team to best address the customer's needs. Integrators will not be replacing HP sales people.

There is also a misleading statement shortly after that concerning one of the objectives of the program: "HP sought to cut sales costs for the HP 3000..." The objective is not to reduce costs, but to deliver more complete client-server solutions to our customers. This new program fills a void for our growing number of small- to medium-size customers who want help in evolving to client-server computing on the HP 3000 platform.

Mark Hudson
HP 3000 Client-Server
Program Manager
Hewlett-Packard

Editor's Note: For more information about the new program, fax your request to (408) 447-4966, Attn: HP 3000 Client-Server Integrators Program.

HP Professional welcomes comments from its readers. Letters may be edited for brevity and clarity, and should be addressed to: HP Professional, 1300 Virginia Dr., Ste. 400, Fort Washington, PA 19034. Fax number: (215) 634-4827. Internet address for staff listed on the masthead: LASTNAME @ CARDINAL. COM
Please include a phone number for verification.

HERMES SoftLab

GRACE

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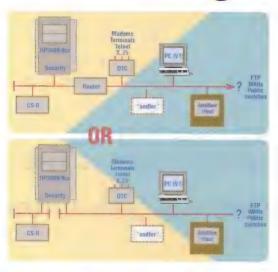
PROVEN QUALITY, ATTRACTIVE PRICING, GRACEFUL FUTURE

GRACE guarantees secure and reliable message delivery between applications in heterogenous enterprise wide environments. Peer-to-Peer transaction processing runs efficiently between application components. Its easy to use, yet powerful API provides a clear split between the application and the network code.

GRACE significantly cuts development costs of distributed client/server applications by completely hiding the complexity of the underlying network from the application programming. It allows to concentrate development resources strictly on the application issues. Thousands of lines of communications code can be replaced by simple GRACE API calls.

GRACE`s modular architecture allows to use TCP/IP, NCS or DCE as the communication mechanism. This provides multiplatform support and assures compliance with the emerging standards. Currently it supports HP-UX, SunOS, AIX, Solaris and MPE/iX operating systems. Grace is aggressively priced for enterprise networks as well as for software development.

Hermes Softlab, Litijska 51, 61000 Ljubljana, Slovenija, phone +386 61 1405 004, fax +386 61 1405 070

Security Suite Gives Sniffer Programs Hay Fever

SECURITY SUITE

- Provides access control, encryption and authentication services

- Stand-alone utility or API

- ANSI and ISO standards compliant

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CIRCLE 352 ON READER CARD

Racal-Guardata (Herndon, Va.) brings new security functionality to the HP 3000 with its suite of products for access control, encryption and authentication. Racal-Guardata has three HP 3000 security products, each of which builds on the previous one. The products consist of host software, a security processor known as Crypto-Server-II (CS-II) and one-time password generation devices (the hand-held WatchWord or PC client Soft-Token).

The CS-II is a tamper resistant module that resides on an isolated segment of the LAN. It contains the Local Master Key, that is used to encrypt all other keys. All secure processing, encryption and de-encryption occurs on the CS-II, offloading this processor-intensive task from the host. All three products offer Data Encryption Standard-based cryptography.

The Access Control Manager (ACM-3000) uses one-time passwords for user authentication and complies with the ANSI X9.26 sign-on security standard. User access can be controlled by MPE user name, account name and logical device. Each user is authenticated during logon by a program added to the system-wide logon UDC. The program prompts for the user's personal WatchWord UserID and then displays a seven-digit random challenge at the user's terminal or PC. The user enters their PIN and the seven-digit challenge. Then WatchWord or Soft-Token responds to the challenge.

If the response is validated, the logon completes, an audit trail entry is created and a system variable (WWUSER) is set to the WatchWord UserID. If the correct response is not given, a message is sent to the console, an audit trail entry is posted and the logon is aborted. ACM-3000 includes a security management interface program to create and administer user access privileges.

SecurIt-3000 includes all the functionality of ACM-3000, adding ANSI X9.23 data encryption, ANSI X9.9 message authentication and an API. The authentication feature validates transmitted data, eliminating the possibility of accidental or intentional alteration.

SecurIt-3000 includes a menu-driven utility that allows encryption and authentication to be implemented without changing existing applications. For modifiable applications, SecurIt-3000 includes an API library that allows security functions to be integrated directly into the application. This is useful for encrypting sensitive data fields.

The Host Security System (HSS-3000) provides all the functionality of ACM-3000 and SecurIt-3000 adding ANSI standard (X9.17) key management. The Key Management Agent facility automatically distributes and manages keys with other secure sites. HSS-3000 is particularly suited to exchanging sensitive data among a large number of sites. Its automated key management simplifies the changing of data keys for encryption and authentication.

These products are only available for the HP 3000. However, a small HP 3000 equipped with ACM-3000 can act as an Internet firewall, protecting an entire heterogeneous network from unauthorized access.

ACM-3000 has a processor independent price of $9,975 and includes one CS-II and one host software license. The Watch-Word hand held password generator is available for $50. A license for Soft-Token (DOS, Windows or Macintosh version) is available for $35.

—*John P. Burke,*
HP 3000 Editor

OPN: Office Goes With The Flow

OPN:OFFICE

- Supports HP 9000 Series 700/800, IBM RS/6000, Pyramid MISserver S and 386/486 PCs

- Performs E-mail and document management

- Price ranges from $125 to $695

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CIRCLE 351 ON READER CARD

The secret's out, but not before it spread to 30,000 users: OPN:Office from OPN:Systems Inc. (Fort Wayne, Ind.) started as a proprietary E-mail system, then developed into an office automation solution used by the likes of Anheuser Busch and the U.S. Congress.

OPN started in the 1970s, when insurance giant Lincoln National Corp. (Fort Wayne, Ind.) needed to reduce paper flow without losing track of documents. According to Jim Coen, president and CEO of OPN, who purchased marketing and development rights in 1993 and formed OPN:Systems Inc., Lincoln didn't find much out there, so they started building the capability themselves.

OPN:Office 7.3.1 includes E-mail, support for diverse terminals, workstations and PCs, document management, calendaring and scheduling, E-mail/fax gateways, desktop publishing and PC-to-server communications software.

Designed for larger organizations across multiple sites, OPN:Office runs on HP-UX, IBM AIX, Interactive UNIX, System V/386 and UNIX SVR3. OPN:World Gateways supports SoftSwitch, SMTP/Internet and fax machines.

OPN:Office's most popular features are E-mail and document management. Although informal notes are not tracked beyond original recipients, formal document management includes requests for action or approval upon distribution, customizable recipient lists, 12 search categories and compound document "stapling." "These information flow aspects are not addressed at all by most E-mail systems," maintains Coen. "We treat documents as assets."

The New York State Department of Public Service (Albany, N.Y.) implemented OPN:Office in 1986. As the staff arm of the Public Service Commission, it has 700 engineers, lawyers, accountants and auditors using the updated HP version on HP 9000/I70s. Mike Short, director of Information Services, says OPN:-Office is used heavily for intra-department computing—E-mail, document management and calendaring. "The document management is very good," Short says.

He often takes the minutes of meetings for four to five organizations. OPN:Office handles this flexibly; he can distribute a document to unlimited file folders.

The calendaring and scheduling feature allows day, week or month viewing. To schedule a meeting, users scan for open time slots. Attendees are notified of pending meetings and can accept or reject appointments. "The department definitely uses that calendar," Short says. "Everyone uses it. There's good top-down support for the product." With offices spread across the state, "New York, Albany and Buffalo can all work together because of OPN. Diversity adds value to our organization. OPN facilitates that diversity."

New to version 7.3.1 is a GUI supporting X terminals, X stations and X software under Windows, OS/2 or Desqview-X. Also new are two previous add-ons: PC Companion and OPN:Style. PC Companion connects servers and PCs with file transfer and exchange. OPN:Style provides desktop publishing with 26 style sheets.

OPN:Systems offers consulting services and trained System Administrators to assist with customizing and implementation. Price ranges from $125 to $695, based on concurrent usage.

—Jim Esch,
Contributor

MEET THE EXPERTS!

Get Specific Answers to Your HP 3000 Computing Questions. Stop By *HP Professional*'s Booth #900 at Interex on Wednesday, September 21st.

HP Professional is proud to announce that the following Hewlett-Packard experts will be available at our booth to answer your individual questions in an informal one-on-one setting:

VINCE GRITSCH - 10:00 to 11:00 am

Channel Development Manager, Commercial Systems Division, Hewlett-Packard

Vince will discuss new HP 3000 applications and tools from third-party vendors. He'll explain and answer questions on how these new tools for MPE/iX will impact your future computing needs.

MARK HUDSON - 2:00 to 3:00 pm

HP 3000 Client-Server Program Manager, Hewlett-Packard

Mark will discuss integrating the HP 3000 in a client-server environment. He'll answer questions you have on HP's new Client-Server Program, how to get started in client-server and who to contact in your region to help meet your client-server computing needs.

GEORGE STACHNIK - 2:00 to 3:00 pm

Product Manager MPE/iX, Commercial Systems Division, Hewlett-Packard

George will answer specific questions you have on the HP 3000, MPE/iX and UNIX interoperability.
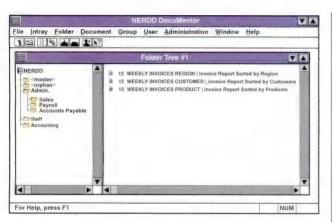
For more information, stop by HP Professional's booth #900.

HP Professional

Register to Win a FREE Copy of The HP-UX Administrators "How To" Book by Marty Poniatowski when you stop by to meet the experts.

NSD's NERDD Sizes Down Reports

```
NERDD DocuMentor
File  Intray  Folder  Document  Group  User  Administration  Window  Help

                          Folder Tree #1
NERDD                          12  WEEKLY INVOICES REGION \ Invoice Report Sorted by Region
  <master>                     12  WEEKLY INVOICES CUSTOMER \ Invoice Report Sorted by Customers
  <orphan>                     12  WEEKLY INVOICES PRODUCT \ Invoice Report Sorted by Products
  Admin.
    Sales
    Payroll
    Accounts Payable
  Staff
  Accounting



For Help, press F1                                      NUM
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How many people get 100+ page reports on a regular basis? Quite a few of you. Now, how many actually need or read the whole thing? Exactly, very few of you. This was the problem faced by Tim Heckle, print czar for HP's Colorado Springs Information Technology Center (ITC). Heckle found help from NSD's (San Mateo, Calif.) Networked Electronic Report & Document Distribution System (NERDD). "Our target is those big reports that people don't really look at," Heckle says. "Now you don't have to print out 600 pages to only look at a few."

Through a Microsoft Windows or Motif interface, NERDD manages documents in a single cohesive seamless solution that combines file manage-

ment and optical storage technologies. Once in the system, NERDD provides for file and document management, search and retrieval, workflow, forms processing, annotation, document revision control and intelligent archiving.

NERDD's three software modules — DocuMentor, DocuFind and DocuScan — allow for input from the host environment, PCs and scanned images.

DocuMentor is a GUI-based administrative hub. It addresses security and access control, indexing, document lifespan, location tracking and updating, and user information and group management.

The NSD proprietary Virtual File Management System resides within DocuMentor which links multiple remote servers together for distributed processing activities. It also allows for a no-coding-required customization of the indexing system without having to write custom script.

DocuFind is the primary user interface. It manages search and retrieval, electronic page clipping with Post-It style notes and annotation, Magic Marker type highlight capabilities, creation of private folders and the ability to send or redirect information.
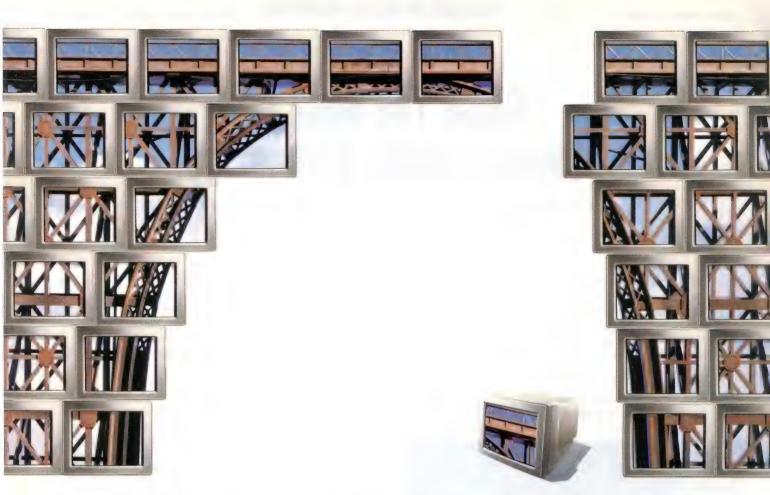
Through DocuFind, users can access documents through public or restricted folders, and also can create their own private

folders. Users can add notes to documents to record explanations, ideas or questions, and then direct those notes or documents to other sources.

DocuScan captures images and imports them into the document management system. Desktop to high-speed scanners can be used. Optional I/OCR capability is available for full text retrieval.

NERDD is currently being used in a pilot program being run out of HP's Colorado Springs ITC in conjunction with Exeter Computer Manufacturing Operation (ECMO; Exeter, N.H.) and HP's Colorado Springs Financial Group. According to Heckle, they are using NERDD (installed this past June) for managing financial and procurement statements. "Our biggest report is about 8,000 pages," Heckle says, "but there is no limit as to how big a document we could store." He also appreciates NERDD's ability to cut and paste sections of reports onto other documents or E-mail messages.

NERDD is a client-server architecture that can be configured to support anywhere from a 10-user system to thousands of users. It connects through single or multiple LANs or WANs using TCP/IP or CCITT X.25 communication protocols.

—*Deborah Schwartz,*
Assistant Editor

A Message On The Risk Of Moving To Client/Server Without A Complete Set Of Tools. Brought To You By The Only Company To Offer One.

Some businesses are choosing a perilous route to client/server technology. By partnering with companies that don't offer all the tools necessary to make this transition, they risk making a huge investment that fails to take them where they need to go.

Which is why you should know about Cognos®. We are the only company to offer a complete set of tools to build and deploy client/server applications.

At the forefront of our product line are our application development tools, PowerHouse® and Axiant™, our second-generation client/server tool. Both enable developers to quickly create powerful high-performance applications.

We also offer Impromptu® and PowerPlay™, our

Windows-based data analysis and reporting tools that empower everyone in your organization by helping them retrieve and analyze the information they need to make informed business decisions. And these tools support leading databases like ORACLE, Sybase, and InterBase.

When it comes to client/server technology, it's not simply a question of crossing that bridge when you come to it. It's a question of finding a strong, stable bridge. Cognos.

For more information or a free copy of our extensive white paper, "Building and Deploying Applications in the '90s," call **1-800-223-2321, extension 6302.** In Canada, call **1-800-361-3163.**

COGNOS®
TOOLS THAT BUILD BUSINESS

See us at INTEREX, booth #617

Close The Book On Never-Ending Technology

Choosing client-resident systems management puts

HP consumers in the driver's seat

• • • • • • • • • • • • • • • • • • •

HP computer consumers can profit from learning the difference between never-ending and client-residents technology to manage enterprises. Embracing the new idea of keeping management software off the system being managed means rejecting host-based technology. That may cause problems for traditional vendors, but it puts consumers in the solutions driver's seat for the first time.

Vantage keeps software off the system being managed

Never-ending technology is the traditional way of managing enterprise resources: install software on each managed system, creating a never-ending need for more resources. Such technology demands you install management software on each managed node. This results in a significant loss of system resources, no standard solution for systems from different vendors, and a significantly higher cost for the management software. The never-ending solution also means you've got to buy

the system management software again if you change to a different system.

Client-resident technology such as Vantage from API, keeps things simple on managed resources. Management software isn't installed on multiple systems, complicating configurations and stealing computer power. Client-resident resource management is truly transparent — because the only software required is outboard from your enterprise, executing on a low-cost workstation. This resource management solution also manages dedicated devices like telephone switches, things never-ending technology is excluded from.

Never-ending technology demands that your network stay on its feet to report on a system's status. Agents, those marvels of technology, can't deliver the goods if a network link, hub or router failure cuts off part of your enterprise. This network lifeline becomes a critical part of never-ending technology. Meanwhile, those SNMP agents cannot perform critical tasks like restarting a system that has experienced a power failure.

Client-resident technology doesn't rely on a network or agents to manage your resources. Vantage uses an exclusive technology to eavesdrop on system console traffic in real time. That means that even if the network fails, managers can still control systems.

Never-ending technology demands manpower. Consumers with such

solutions report that the problem resolution process can involve every supplier which has installed software on managed systems. The hidden cost of host-based technology is complexity that drives up manpower costs, robbing consumers of the promised benefits of client-server computing.

Client-resident technology, like the Connect-Ware solutions from API International, cuts resources needed to manage enterprises of all sizes. Each managing Vantage workstation can command other workstations, to deliver cascading command from a single GUI screen. Because there's no software on managed systems, problem resolution requires fewer experts. Failures don't become part of a network problem. This consolidation of enterprise management frees up operations staff for more productive work. For one well-known HP customer, it will save $12 million in its first year of use.

Computer consumers must learn to demand simple outboard management solutions which don't incur constant upgrade costs. API's Connect-Ware does this, putting consumers in the driver's seat — a profitable place to ride on the information highway. *—Jane Copeland, President*

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Performance Software Passes The Test

Automated Software Testing Keeps Your Legacy and Reputation, Intact

"If [a company's] software fails, their livelihood and reputation are at stake."

John Kiley
President
Performance Software Inc.

Tick. Tick. Tick. There's a time bomb ticking in your software. The Denver airport, Chemical Bank and AT&T found out the hard way. But that's only the tip of the iceberg, according to John Kiley, president of Performance Software (Newburyport, Mass.), who estimates that less than two percent of software catastrophies find their way into the mainstream media. Kiley ought to know, it's his corporate mission to prevent those kinds of incidents and accidents.

"We are focused on software testing with a strong emphasis in the commercial MIS space," says Kiley. Founded in 1986, Performance Software has been a leading testing solution for Digital OpenVMS VAX and Alpha AXP platforms.

But in April 1994, Performance announced V-TEST for UNIX/HP-UX, an HP-UX version of their flagship product. V-TEST allows for automated software testing and performance measurements using recordings of actual user sessions on different kinds of local or remote terminals. Database systems, 4GL applications, software packages or in-house applications can be tested. By using Remote Terminal Emulation (RTE), V-TEST also can test applications across a network.

Citing the ISO 9000 initiatives and the Malcom Baldridge Awards, Kiley sees an increased awareness of quality throughout Fortune 500 organizations, including MIS departments. Performance supports over 500 companies worldwide, most of which have migrated from the legacy world, says Kiley. "If their software fails, their livelihood and reputation are at stake."

With the pressure to build applications "yesterday," it's common to find software developers struggling with monthly, weekly or even daily build cycles. "Ten years ago, with a build a year or every 6 months, you could get away with manual testing," admits Kiley. According to the Gartner Group (Stamford, Conn.), only 25 percent of application development organizations perform regression testing, yet experience suggests that there is a 50 percent chance that a modification to an individual program module will cause yet another problem or bug.

According to Kiley, software testing should answer three questions: Does the application do what it is designed to do? Does it perform at what a user would consider a proper response time? If a change is made to the application or environment, has that system been fully tested? In today's client-server environments, the answers are particularly critical. "If you haven't automated your software testing, there's no hope of keeping up," says Kiley.

With a 45 percent revenue growth rate, Kiley feels that two-thirds of the "missionary work" in the market is done. He now views Performance as an "application development partner for any organization seeking to successfully migrate their mission critical applications to UNIX." Consulting now accounts for 10 percent to 20 percent of the company's revenues.

Half of Performance's sales come from Europe and half from U.S. sales. Performance counts Apple Computer, American Airlines, Bankers Trust, Bell Atlantic, Barclays Bank, Boeing, DEC, Intel, Pfizer, British Telecom and Xerox among the companies using its products. With offices in Boston, Chicago, San Francisco, London, Paris and Dusseldorf, Performance is "getting closer to our customers," says Kiley.

Besides becoming an HP Channel Partner, Performance is a full marketing and technology partner with Software Quality Automation (SQA; Woburn, Mass.) which offers TeamTest for testing GUI applications under Microsoft Windows. "They are moving in the right direction," says Brendan Conway, a Gartner Group analyst. "They are heading into the UNIX server market which is a positive step."

—*George A. Thompson,*
Technical Editor

The HP 3000 Makes News At Philadelphia Newspapers

Extra! Extra! Read all about it! Computer vendors are re-learning an age old business adage: It pays to take care of your customers. That's why Philadelphia Newspapers Inc. (PNI), one of the largest of 29 newspapers in the Knight-Ridder publishing chain, decided to downsize their IBM mainframe with HP. Located in Philadelphia, Pa., PNI is the publisher of *The Philadelphia Inquirer* (1.4 million subscribers) and *The Philadelphia Daily News* (220,000 subscribers).

Although Knight-Ridder sets the strategic direction for all their newspapers, HP's Professional Services Organization (PSO) figured prominently in PNI's plans to phase out their aging IBM 3090-150E mainframe. Concentrating on solving the needs of the newspaper business rather than on technical solutions, the PSO project team provided consulting services to Al Vaccaro, business systems director for PNI.

After an extensive cost study, Vaccaro says he received a thorough document from HP's PSO that was, in Vaccaro's view, an analysis and a proposal. "HP offered us increased flexibility, reliability and overall better cost/performance," says Vaccaro. The PSO proposal called for five HP 3000s running MPE/iX to run PNI's major applications. Vaccaro had already spent time tuning his 3090 (installed in 1987) and was considering upgrading to an IBM ES/9000. But the costs of going in that direction worried him. After counting the $3 million cost of the replacement system, and figuring the additional expense of new software licenses and maintenance agreements, "It added

up to a tremendous capital investment," he says. As CPU cycles eventually became scarce, Vaccaro's development team bore the burden; they couldn't submit jobs during the day, so they had to work at night which delayed projects significantly.

So late in the summer of 1992, Vaccaro decided to benchmark the HP platform (using a loaner HP 3000 Model 937). "We were concerned about high transaction volumes," he says. But his fears were

unfounded. "We were incredibly impressed with its performance using our data."

So impressed, that PNI purchased the HP 3000 Model 937 in December 1992 to use as a development machine. Vaccaro notes that development functions are separated from production functions. Now, a year and a half into the migration strategy, Vaccaro is migrating PNI's financials data to a

HP Measures Up At Drexel University

This question is for all the engineers in class. After leaving college with a freshly minted engineering degree, did you find that you had no practical experience, especially with the test and measurement equipment in your particular field? Sadly, if your an engineering graduate from a U.S. university, a lack of

hands-on experience is par for the course. But what if students could work with state-of-the-art instruments from a company like HP?

And what if those instruments were available to an entire class of first and second year engineering students?

Well, at Drexel University (Philadelphia, Pa.) both possibilities turned into a reality after Drexel and HP decided to rethink their respective approaches to the education market.

For Drexel, the second largest private engineering school in the United States, it began in 1988 with a five-year experimental project (funded in part by the National Science Foundation (NSF) and General Electric Foundation) called "An Enhanced Education Experience for Engineering Students" or E[4].

"We were flunking two-thirds of our product, they were graduating on average about a year late and they

PNI

HP 3000 Model 957 running Collier-Jackson (CJ) newspaper software. "With CJ, we've changed our entire AP batch process," explains Vaccaro. "Cleaning the data took up the largest amount of time."

For Vaccaro, the results speak for themselves: "We've reduced our batch processing time from six hours to less than one hour. We could only write checks two times a week and only at night. Now with 486-based PCs (running Windows) used for input, PNI clerks run a check run any time they want, print the checks out on their own floor, schedule their own jobs and have them completed in 45 minutes to an hour."

Currently, Vaccaro is in the middle of migrating the general ledger system from MVS to an HP 3000

Model 957. In 1995, Vaccaro expects to replace circulation software from the Users Sierra Group (USG; Austin, Texas) with CJ software. In the future, an HP 3000 Model 957 will be used for data warehouse applications. Vaccaro expects to give his end users the ability to extract critical circulation data as well as provide an Executive Information System for PNI management which will provide access to historical data not previously accessible.

Vaccaro's aware of creating a world that is much different than anything that came before. "HP's distributed platform will allow us to implement new technology, especially client-server architectures which we could not have done with IBM." For example, some

3270 terminals are being replaced with 486-based PCs, and the new world will eventually include Novell file servers which "will provide us with a means of using more client-server tools." The impact will be felt on all 4,000 PNI employees, including *Inquirer* and *Daily News* journalists who will be accessing internal and external databases for newsworthy information. But while the technology brings risks and opportunities, the HP solution is cost-effective. "Once completed (in about five years)," the difference in operating costs will be about $1 million dollars a year," maintains Vaccaro.

—George A. Thompson, Technical Editor

Drexel

were very weak in lab experience," says Dr. Robert Quinn, professor of Electrical and Computer Engineering at Drexel. "So we redesigned our engineering curriculum to give our students the necessary skills to be a successful engineer in today's workplace."

The objective of the E[4] program was to change the freshman and sophomore years by emphasizing what Quinn refers to as "upfront engineering." Instead of theory, students learn to appreciate how individual courses like math and physics are related to engineering. Another important feature of the Drexel E[4] program is teaching students right from the start to use the computers, software, and test and measurement equipment they are likely to encounter on the job.

After the program became popular, the school needed to expand its engineering laboratory. So with the "can do" efforts of Kevin Gillespie, a local HP electronic instruments

sales engineer, Drexel bought 150 HP test and measurement instruments for 30 new lab stations. Each lab station consists of the following HP equipment: an oscilloscope (HP 54600), multimeter (HP 34401A), universal counter (HP53131A), functions arb generator (HP 33120A), switch/test unit (HP 3488A) and power supply (HP E3600). "The lab station is capable of doing all the experiments we have in the course," says Quinn.

"The sale represents HP's first foray into the educational marketplace," according to Marsh Faber, education manager for HP's Personal Measurements Operations. It was a learning experience for the two-year-old HP division chartered to improve HP's approach in small business markets. "We had to make it easy for the small customer [under $5,000] to do business with HP," says Faber.

Faber points out that the small customer and educational institutions have similar needs. For instance, schools and small business

both operate with smaller, tighter budgets than their larger corporate counterparts. Consequently, making the equipment affordable is important, but you also "have to give them what they need to get the job done." Quite often Faber says that means they need the product for more than one purpose.

For HP, it means being committed to low-cost engineering techniques that don't compromise quality, says Faber. "Everything is surface mounted, we leverage a lot of parts; assembly time is less than five minutes." Faber proudly says, "Students can learn on the real thing. And they don't have to be retaught when they get out of school. So it makes them more marketable to employers."

According to Quinn, "the lab workstations are the centerpiece of the E[4] program. Students work in the lab three hours a week, every week." Students also use an Apple Macintosh and various symbolic algebra, data acquisition, simulation and CAD software packages

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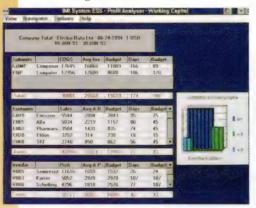FIRST AID KIT

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Order Of The Day

IMI Helps Bristol Meyers Squibb Ensure That The Customer Is Always Right

Keeping your customers happy is critical in business. For Bristol Meyers Squibb Co. (BM Squibb; Stamford, Conn.), providers of 1,500 products including hair care, skin care and antiperspirant products, order management is one way of ensuring that no customer's feathers get ruffled.

According to Joe Marconi, systems information manager for the Consumer Products Group (CPG) at BM Squibb, they were looking to improve their information and technical environments. "We were living in a batch-oriented field with systems that were 10 to 15 years old," Marconi says. Because of this, BM Squibb CPG couldn't learn the business impact of customer issues until the next day. Marconi says they wanted to "cut the order cycle by going to real-time" so they could act immediately on customer issues, based on up-to-date, accurate information.

After evaluating several products, Marconi decided to go with System ESS Order Management software from Industri-Matematik Inc. (IMI; Tarrytown, N.Y.), the U.S. subsidiary of Stockholm, Sweden-based Industri-Matematik AB.

System ESS is a UNIX-based solution that enables manufacturers to create customer-centric logistics systems for managing complex orders and for addressing individual customer preferences in pricing, packaging and invoicing. Recent enhancements include an added template that simplifies the handling of recurring orders. By providing more in-depth information on a customer, System ESS enables customer order representatives to define a variety of customer order and invoice preference choices, including product eligibility, product variation and substitution rules. "Having a good process and logistics is a great help," Marconi says, "and [System ESS] provided functionality across the board."

BM Squibb CPG had been using a COBOL-oriented, IBM 3090 mainframe running IMS and DB2, but chose to use System ESS on an HP 9000 Series 150 running Oracle. This migration "brought a more open environment," Marconi says. "We're not truly there yet, but this is getting us on a track moving toward client-server."

So far, BM Squibb has successfully merged two of its consumer product divisions together under the new system, and they are currently starting the next phase of the project. "Moving to the new system was too big a jump for our in-house technical staff," so Marconi notes that the ability to leverage IMI's technical experience and expertise was a big plus. Another advantage was IMI's small size. "We wanted service and we wanted it quickly," Marconi says, "but we didn't want to be one of many clients.

"IMI has been a good partner," Marconi says. "While no partner is perfect, they have been able to help us make it happen."

—*Deborah Schwartz,*
Assistant Editor

Drexel *continued from page 26*

in the course of their lab experiments. Quinn notes that E[4] "sophomores now make the best lab assistants," because the graduate students aren't as familiar with the instruments.

"The program has been fairly successful," Quinn says modestly. But like a good engineer, Quinn has the results to prove it. A 1993 report conducted by Quinn showed that E[4] students had higher GPAs, higher retention rates and were "on track to graduate" (didn't fail any courses) than a comparable control group of students. Consequently, this September the program is being officially adopted by Drexel's College of Engineering department. In the fall, the entire freshman class (across all

engineering disciplines) will enter the E[4] program.

The E[4] program also is being emulated by others. The United Arab Emirates adopted the entire program "lock stock and barrel," says Quinn. And The Gateway Coalition (a project jointly funded by the NSF and 10 colleges and universities) is adopting certain features as the model for other schools. "We thought we were shooting too high," says Quinn in retrospect. "But the students are just eating it up. We're glad to be conveying the idea that learning engineering is exciting, rewarding and just plain fun."

—*George A. Thompson,*
Technical Editor

Corporate Profile

SPEEDWARE CORPORATION INC.

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Speedware Client Edition: 32-bit, 'Chicago'- compliant GUI.

"We looked at others but Speedware was the fastest."

Pierre Paquet, President, Sages Informatique

Speedware Corporation manufactures and markets the Speedware Client/Server Series to CIOs, business unit managers and their respective development staff who are committed to managing change in an increasingly complex and competitive world.

The product suite consists of **Speedware**, a 4GL, object-oriented tool set for extremely rapid development of cross-platform, enterprise applications; **EasyReporter**, an end-user report generator that flows information from Speedware applications and popular databases into PC programs like MS Excel, and **Speedware Financials,** a set of financial applications developed in Speedware.

The Speedware family provides an open environment that supports an ever-growing number of file and database management systems. This family offers portability, interoperability, platform independence, data integration, prototyping, visual programming and migration excellence. Applications developed in Speedware are portable across multiple platforms from Intel-based PCs running MS Windows, MS DOS, OS/2 and SCO UNIX, through HP 3000 (MPE/iX), HP 9000 (HP/UX) and RS/6000 (AIX) workstations and high-end servers. Speedware for the IBM AS/400 is undergoing customer evaluation and is planned for general release shortly. Speedware supports both character based and graphical runtime presentations.

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The latest addition to the Speedware family is the Speedware Client Edition, a PC-based development package with the attendant visual programming devices and GUI 'widgets' demanded by today's end-users. This presentation conforms to the Microsoft Windows 4.0 design standard, while drawing on the cross platform portability and database independence that Speedware is famous for. Unlike most other PC development tools, Speedware Client Edition and Speedware server versions put. The processing services best suited to PC and server platforms on said platforms. This is true client/server computing.

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Speedware is a member of Hewlett-Packard's Channel Partner program, IBM's AS/400 Application Development Program, IBM's RS/6000 AIX/CASE Program, Sybase's Synergy Program (ISV), Informix's InSync Partner Program and is an ISV of Oracle Corp.

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Corporate Profile

WHO IS CLIENT SYSTEMS, INC.?

New demands from new markets call for new solutions. Client Systems helps VARs and manufacturers provide them.

Client Systems helps VARs and manufacturers work together as partners to satisfy customer demands...and provide more profitable opportunities than traditional approaches to product distribution.

As the client/server market grows increasingly sophisticated and competitive, Client Systems, Inc. provides a range of support services to value-added resellers and vendors. Recognized as the leading full-service distributor of client/server hardware and software solutions for the Hewlett-Packard Company's HP 3000, we offer a range of products and services across the entire HP product platform.

Client Systems helps VARs and manufacturers work together as partners to satisfy customer demands. We facilitate partnerships that provide more profitable opportunities than traditional approaches to product distribution. What's more, we maximize the core competencies of the VARs and manufacturers by packaging the multiple, complex components required to market open systems products and services through the channel.

How Client Systems Benefits VARs

Client Systems understands the environment VARs work in and the scope of the requirements their end-user customers place on them. End-user customers need to market globally, cut costs, increase productivity, and improve their quality of service. Many lack MIS staffs and want somebody to be responsible for application software, hardware, system software and the network. Client Systems is expertly-equipped to deliver solutions VARs can leverage to not only meet their customers' demands, but help increase VARs' revenue and enhance account control.

As a two-tier distributor, Client Systems provides expertise the experts count on. Noone in the industry knows more about mission-critical client/server applications and networking technologies for the HP platform. And noone is more committed to providing flexible, cost-effective configuration, delivery and flexible credit terms.

Client Systems Benefits Manufacturers

Unlike most distributors, Client Systems doesn't handle every new product that comes along. Instead, it creates strategic alliances with manufacturers of *real, working* client/server solutions for accounting, manufacturing, distributing, imaging, and many other commercial requirements — all of which run on the HP 3000 and HP 9000 midrange servers and workstations.

Plus, Client Systems is the *only* distributor in the computing marketplace that provides suppliers with "channel-ready" commercial computing solutions. We eliminate the enormous time commitment and guesswork required to select appropriate technology partners. Before Client Systems agrees to distribute a vendor's product, we take them through an extensive channel-ready process, which means they are mutually compatible, readily available, backed by excellent technical support and competitively priced.

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Down Out

But Not

When Your Datacenter Goes Down,

The Clock Is Ticking On Your Company's

Future. Are You Prepared With A Business

Resumption Plan?

With current business demands dictating 7x 24 operation, there's not much time for downtime. But you're not worried. After all, you schedule backups regularly. You have MIPS available. And you're insured against natural disasters. Or maybe that little voice in the back of your head is saying "Nah, it can't happen here." But let's be honest.

What if it did happen here? And there. And everywhere. Do you have a disaster recovery plan? You do? So far, so good. Your datacenter is safe. But that might not be good enough. In today's open systems environment, where multiplatform IS architectures are de rigueur, anything goes. And when it goes down, regardless of the reason, anything can and often does happen. "It's a major problem," according to Robert Campbell, CEO of Advanced Information Management (AIM; Woodbridge, Va.) a contingency planning firm.

GEORGE A. THOMPSON

"Distributed platforms move us beyond the focus of technology and even disaster planning. You've got to tie them back to your business functions."

In other words, because IS is strategically integrated into your enterprise's ability to do business, a business resumption or business continuity plan is necessary. Unlike the process of disaster recovery, which focuses on protecting hardware and software in a centralized datacenter, business resumption planning requires a focus on *any event that interferes with normal business routines.*

Fifty percent of all companies that do not recover their datacenter within 10 business days never fully recover financially.

Although natural disasters like floods, hurricanes and earthquakes tend to grab the headlines, most business disruptions happen for less dramatic reasons: leaky toilets, broken water pipes, storms that knock out local power grids stranding employees at home, a disgruntled employee who steals important data or plants a virus, a union picket line that blocks key employees from entering and other accidental hardware, software and network errors.

"Don't overlook the security of your systems as a major point of disruption," says Ken Cutler, vice president of the Information Security Institute, a subdivision of MIS Training Institute (Framingham, Mass.). "There are continuing vulnerabilities for failing to follow the guidance of vendors, security manuals and general security practices. And with dial-up access on the increase, the potential for a major disruption is increasing too."

In 1988, the Morris Worm disabled more than 6,000 systems. Cutler says because a worm consumes computing resources it is effectively like pulling out the power cord. Hackers could also use your system as an exit point for other networks. "Most headaches come from not having the right network management tools," Cutler observes.

WHAT!? ME WORRY?

ACCORDING TO BELINDA WILSON, a certified disaster recovery planner (CDRP) at HP, statistics show that:
• The average firm loses 2 percent to 3 percent of their total gross sales within the first 10 days after losing data processing.

• Critical business functions cannot continue more than 4.8 days without a recovery in process.
• Fifty percent of all companies that do not recover their datacenter within 10 business days never fully recover financially.
• Ninety-three percent of firms that didn't have a recovery plan in place were out of business within five years after a major disaster.

As HP's resident disaster-meister, Wilson knows from practical experience that disaster recovery and business resumption are different sides of the same coin. Statistics also show that disasters don't happen during normal business hours. "We brainstorm with our customers to see how long they can tolerate being down. If we take away the power, can you sustain your business for four hours? 24 hours? 48 hours?

Still, Wilson says there's just not enough planning among Fortune 1000 companies. Not especially surprising, when you consider that 50 percent of U.S. Fortune 500 companies do not have a formal business resumption plan in place. However, Wilson thinks that financial institutions are well equipped to handle disasters, but they have regulatory requirements motivating them.

Health care companies have been making inquiries for a year now, says Wilson "because the whole industry is moving toward having a disaster recovery in place." She also notes that manufacturing companies are less prepared because "with processes so unique they haven't thought about what happens when it stops."

PEOPLE AND COMMUNICATIONS FIRST

BUSINESS RESUMPTION requires a focus on people first. "Companies forget about the human aspect," says Wilson. And because business resumption is an enterprise-wide affair, all company departments should get involved — personnel, finance, marketing, sales, manufacturing and customer support. Consequently, building cross-functional teams are important in business continuity planning.

Who are the kinds of people that make the best recovery team members? "Those who can make quality decisions in a very short time frame," says Wilson. And Wilson cautions they may not necessarily be found on the IS staff — they may be too analytical. Analytical people tend to want more data before making a decision. In a crisis, you don't have that time. You have to go with what you feel."

Communication, internal and external, is another overlooked aspect of a business resumption plan. During regional disasters, employees want to know that family members are safe before they attend to the situation at hand. Team members need quick access to updated telephone numbers and calling trees to contact managers and other employees on-site or at other com-

pany locations, as well as for alerting the appropriate public safety authorities. Phone calls to wire services, suppliers, distributors and customers also may be necessary.

People also change jobs and they change their technology focus. Communication trees, phone numbers and evacuation plans all need to be kept current, and the appropriate people need to be kept informed of changes, stresses Wilson. During the San Francisco earthquake in 1989, some employees didn't know whether to come into work or stay home. Think about establishing an emergency voice mailbox in a *different area code* or contact TV stations to make announcements during a regional disaster.

Also, if you need to go to another location, digital links to the outside world become important. Will you need: synchronous and asynchronous modems, dedicated and switched T1 and 56 Kb data lines, and access to private and public X.25 packet switched networks.

In the final analysis, data integrity comes down to the reliability and high availability capabilities of your computer systems. HP 3000 MPE and HP 9000 HP-UX products offer both to varying degrees. Although nearly everyone is tinkering or developing UNIX-based systems these days, when it comes to disaster tolerance, MPE/iX is a well-hardened operating system according to Bryan Dean, HP high availability product manager. "As a mature OS, designed for commercial environments, it doesn't fail that much to begin with."

For example, standard HP 3000 and MPE/iX configurations include a built-in transaction manager to ensure data integrity and a battery backup. "Memory sizes have gotten huge, which

DISASTER RECOVERY IN THE MAKING

As part of a business recovery plan, solutions can range from from complete internal redundancy to reciprocal agreements with other companies, cold sites and hot sites.

Depending on the complexity of your architecture, the cost of redundancy — an exact on-site duplicate of your hardware and software — may be prohibitively expensive. Demand for more processing power also may lead you to "steal" CPU cycles from your standby system, thereby weakening your defense in the event of a business disruption.

Reciprocal agreements "are a way to make two disasters out of one," according to Phil Bucher, vice president of marketing for Data Assurance (Englewood, Colo.). Usually, it's a gentleman's agreement that allows for batch processing on another company's equipment. Although this arrangement allows you to share computing resources, you share the disasters too. For online processing, Bucher says "they just don't work."

Cold sites are computer ready locations with the necessary communications infrastructure but it does not have the systems in place. However, getting your business back up is dependent on vendor delivery times. Temporary makeshift operations may be necessary until all systems are installed, restored and synchronized.

Hot sites are locations containing comparably equipped hardware and software as well as the telecom and datacom infrastructure necessary to keep your business going when you datacenter is destroyed or permanently damaged. Hot sites "should provide equal to or larger than what you are now running," according to Bucher.

Data Assurance has one HP 3000 system and one HP 9000 Series 800/T500 system on-site, as well as many other UNIX and PC workstations and servers. Data Assurance maintains hot sites in Colorado and New Jersey. Data Assurance operates the regional business recovery facility for the Rocky Mountain area with space for over 200 people.

As part of its Disaster Recovery Program, HP maintains its own hot sites with access to HP 3000 and HP 9000 systems, as well as IBM and DEC machines, via HP Backup Service. HP's hot sites are located in Federal Way, Wash. and Wayne, Pa.

Computer Solutions Inc. (Orange, N.J.) is an HP-specific hot site vendor supplying HP 3000 and HP 9000 systems. Computer Solutions maintains hot sites at its headquarters in Orange, N.J. with a backup site in Clinton, N.J.

When choosing a hot site vendor, two important criteria to keep in mind are the ratio of subscribers to the available systems and declaration fees. Both Data Assurance's and HP's subscriber ratios are 30 to 1. At Computer Solutions, the subscriber ratio is 4 to 1.

Declaration fees are charged when you declare your intention to use a hot site. But there may also be monthly subscription fees, cancellation fees, testing/rehearsal fees, daily usage fees, operating fees and other miscellaneous charges.

According to Bucher, "At Data Assurance, we don't charge a declaration fee or a daily usage fee. We encourage you to use the hot site for any reason when you need it." At Computer Solutions, "We charge a monthly fee (depending on configuration) and a daily fee if you are using the system. We don't charge a declaration fee," says John Painter, marketing director at Computer Solutions.

An end-user recovery site also may be used in conjunction with a hot site. Usually within a 50-mile radius of your current location, these sites duplicate an office environment with telecommunication through LANs or terminals. If a datacenter is temporarily closed or condemned, certain employees can be sent to these recovery sites to work.

For large companies, HP and IBM also provide joint disaster recovery services. As part of a cooperative agreement signed in November 1993, HP and IBM coordinate their efforts and simplify procedures for subscribers.

For small business who don't have the system complexity or the money to maintain cold or hot sites, HP provides Backup Express which provides an operational loaner system within 48 hours after notification at your business site or to a specified location.

brings a higher chance of memory failure, so memory page deallocation will be in the next release of MPE/iX," says Dean.

As for hardware failures, Dean says you can bring in other products, like mirrored disks and disk arrays (RAID), for fault tolerant disk I/O subsystems. But the HP 3000 also offers a less publicized solution. With HP's SharePlex/iX you can loosely couple or "cluster" from two to 124 systems without regard to geographic location in a real-time fashion so that its looks like one large system, says Dean.

In the final analysis, data integrity comes down to the reliability and high availability capabilities of your computer systems.

SharePlex/iX actually consists of NetBase from Quest Software (Newport Beach, Calif.) which provides application replication, network file access and print spooling management, while HP's OpenView provides a single point of network administration. While vendors are claiming they can replicate their database (Informix, Ingres, Oracle and Sybase have shipped database replication products), Dean explains they can't replicate all the programs you may be using because they don't have the rest of the application environment. With SharePlex, your database, as well as flat files, ISAM and KSAM files, are all accessible.

Besides its disaster recovery capabilities, SharePlex can be a cost-effective way to achieve horizontal growth, according to Dean. "As your processing demands increase, you can add more processors." And during a period of additional database querying, "you can use it as a load balancer," says Dean.

Many mail order companies using Smith-Gardner & Associates' (Boca Raton, Fla.) MACS software on HP 3000 MPE systems take advantage of SharePlex, because they can't afford to be down. "If all your eggs are in one basket, you better have a very strong basket. If not, you need to get another basket," says Dean philosophically.

UNIX vendors are realizing the importance of a strong basket. They are realizing that they need an operating system that doesn't easily corrupt the data or fail the system. "They are working on it, but it's going to take time because everyone is trying to share a common kernel," says Dean.

Most HP-UX customers look at the overall availability requirements, according to David Scott, software product line manager for HP's General Systems Division. "And we can achieve a 99.9 percent uptime without high availability products included."

However, Scott cites disk drives as one of the most frequently voiced high availability concerns among HP-UX customers with mission-critical applications. HP offers RAID configurations which implement RAID Level 3 and 5. RAID Level 3 uses a separate data protection disk to store an encoded form of data from the other disks in the array. Level 5 is spread across all the disk drives in the array. When a failure occurs, the failed disk may be replaced online (hot-swapped) and the encoded data will be reconstructed on the new disk.

Another high availability disk product, is MirrorDisk/UX, maintains up to three copies of data on separate disks so that data is still intact after any single disk or interface card failure. It's transparent to the application and works with the HP-UX kernel to manage the mirrored disks so no application modification is required. All cables, interface cards, controllers and power supplies are duplicated.
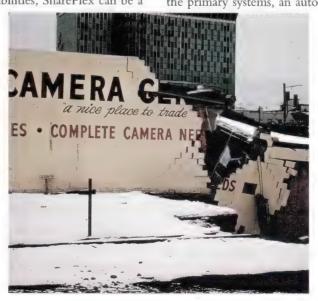
SwitchOver/UX is a LAN-based solution providing nearly continuous system operation by allowing the use of a standby system, which will act as a backup for up to seven primary systems if you use an HP-FL interface, or up to four if you use Fast/Wide SCSI or SCSI interfaces.

SwitchOver/UX uses a "heartbeat" mechanism which sends a state of the system message (time intervals are configurable) to the standby system. When the heartbeat stops on one of the primary systems, an automatic recovery of that system begins. The recovery process includes fault-detection, and system and application recovery. When users need to log back on, they don't need to know that they are logging on to a different system.

To prevent what is called split brain syndrome, (two systems think they are both primary), a failed system is automatically locked out. Over the past three or four years, HP SwitchOver has been installed in over 2,000 sites. Scott stress that flexibility of recovery versus speed of recovery is the primary concern for HP-UX improvements.

In the end, there are only two

kinds of disasters: The ones you are prepared for and the ones you are not. But don't wait. For most corporations, it takes two years to develop a workable business resumption plan. And three years for multinational corporations, says Wilson. Workable is the operative word.

HP takes a Total Quality Management (TQM) approach, says Cheryl Johannes, program marketing manager for HP's Business Recovery Services. "Set an objective. Set a measurement. Find the things that don't work."

Do you know how long will it take to assemble your disaster recovery team? How long will it take to reload backup tapes on different systems? Do you have a copy of your data architecture? Software licenses? Hardware serial numbers? Documentation? So, according to Wilson, "you need a rehearsal at least once a year."

Rehearsals allow you to troubleshoot your system and network, and make improvements to your resumption plan. Sometimes backup tapes are unreadable. It's not uncommon to find inexperienced operators making backups without ever realizing there isn't any data on the tape. You also can learn how easy it is to breach the security of your system during a rehearsal. And you can test different hardware and peripheral configurations and software without penalty or danger of disrupting your own system.

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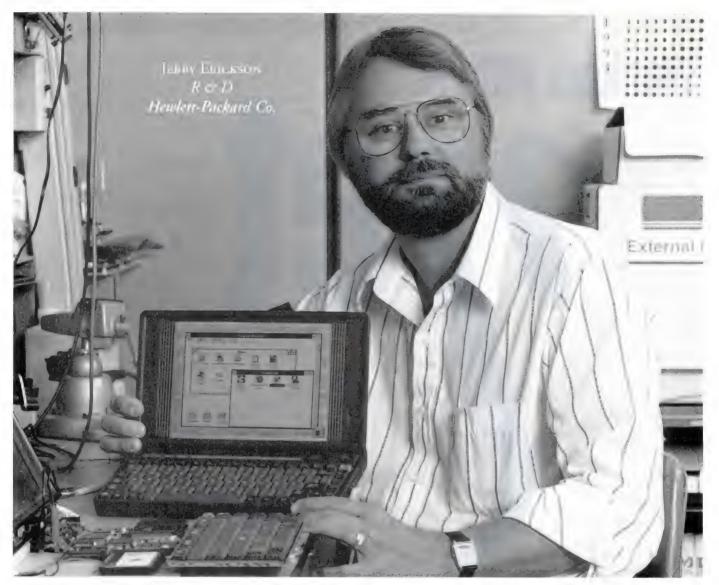Boca Raton, FL 33487
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A rehearsal also may dramatically demonstrate the fragile interdependence of distributed networked systems. "In the last five to eight years, technology has migrated out into work areas," says AIM's Campbell. "We've become much more productive but also more dependent on technology than we sometimes realize."

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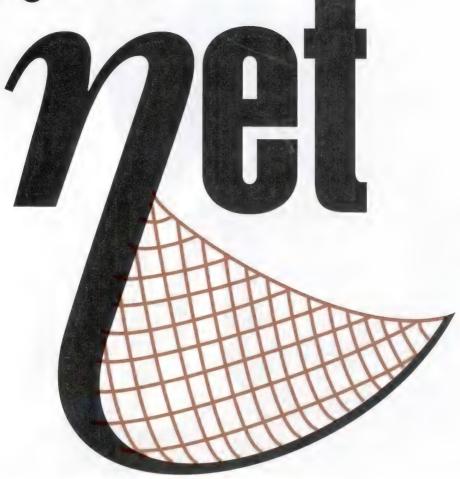
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Just Like Network Infiltrators, Network Security

Administrators Need Cunning And Creativity As Their

Recent reports of sophisticated software that was allegedly placed on various computers throughout the Internet to allow passwords and electronic addresses to be stolen, have IS managers reevaluating their security measures. Other reports indicate that with an increase in the number of intruders monitoring network traffic, networked systems that offer remote access via Telnet, ftp and rlogin are at risk.

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The result is a security nightmare, with the opportunity for unprecedented intrusion and violation. For example, several months ago it was reported that intruders were using a special network

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monitoring tool to collect host and user authentication information available on the network. Typically, they install "Trojan horse" variations of standard UNIX commands.

THE ENEMY WITHOUT

FACE IT, FEW BUSINESSES today can function without their computer networks. Meanwhile, their growth in size and functionality has been accompanied by a significant increase in the number of network devices and remote users. The growing use of wireless and notebook PCs poses its own set of security headaches. With access to the Internet and use of EDI now a necessity, business communications are no longer limited to internal users.

While internal security breaches cause definite problems within a company, they can often be predictable and avoidable (*see In Security sidebar*). On the other hand, external security breaches pose a real threat, especially when outsiders get access to confidential corporate information. Unlike the mainframe environment, the client-server model with its disparate LANs and systems provide many potential points of failure. While dialback modems are generally fairly secure, feisty intruders have been known to hack into a phone line.

Network managers are finding that network security now requires the establishment of careful policies and procedures. "Most people stick their head in the sand," says Peter Neumann, principal scientist at Computer Lab International at SRI (Palo

IN SECURITY

Network security is one of those issues that network administrators simply can't push to the wayside. At the very least, a breach in security will be a nuisance, but ultimately it can cost the company in time and money. All too often, however, administrators focus on security threats that come from outside of the office. In reality, users with bad security habits, such as writing passwords on slips of paper which are then left lying around for anyone to see, can cause just as much if not more damage to a company's security.

While implementing software and hardware solutions will produce marginal improvements in security, improved user habits will usually yield a greater return. Generally, educating the user about the security issues they must deal with is the best way to get the desired results.

By creating a comprehensive security plan, administrators are able to organize and define existing and potential security problems. Following the "divide and conquer" rule allows problems to be effectively tackled one at a time.

Often transfers, promotions and new hires force unknown problems to surface. To alleviate this, the security plan makes filling in the gaps easy by providing a comparison of the current state of the network to a baseline. The plan also shows a historical view of all potential problems which provides a detailed explanation as to why certain procedures or rules are implemented.

Additionally, the plan allows for management, users and administrators to establish a workable implementation that suits their requirements. Finally, the plan details procedures that will be enacted if someone commits a security infraction. This prevents administrators from appearing to favor certain users, because the rules and penalties are already in place.

Creating a security plan for your company involves a number of steps. The first step is to break the company into security groups. The groups can be formed based on any of the following criteria:

- Membership in a department or workgroup
- Seniority
- Job function

Once users are assigned to a group, establish the tasks they need to accomplish and the responsibilities they hold. These tasks should be broken up into smaller logical units, for example: Which applications are needed? Do they need any special equipment such as faxes or special printers?

At this stage it is also necessary to assess the access needs of each group. For example, employees who work in the personnel department need access to employee records while the accountants need access to financial records. Generally these groups' needs do not overlap, although there may occasionally be some cross over. It is important to always keep an eye out for users with more access than necessary.

Once you have defined the users' tasks, it is necessary to do the same for your own tasks. Administrative tasks can be centralized or decentralized. The advantage to a network with centralized control is the straight line from a problem to its solution. Everyone will come to you with their network questions and you have control over all aspects of the network. But, more often than not, it is impossible for a single person to handle an entire network on their own. The solution to this is to decentralize the responsibility. In decentralization, however, make sure that administrative tasks are clearly defined and that only one person is assigned responsibility for any given area.

Remember, your plan should include: a general overview of security issues faced by the users, and the importance of these issues and the need to have security rules; a section detailing the most frequent security problems that occur on the network; and a section that talks about additional security risks such as printed materials and E-mail messages.

Finally, update the plan as your corporate structure or individual responsibilities change. A successful implementation of the plan should reduce current internal security problems and reduce the risk of new ones.— DS

Alto, Calif.) and author of the forthcoming book *Computer-Related Risks*. "Operating system security is mediocre, computer crime labs are flabby and the sense of compliance regarding legal, ethical and moral issues is inadequate."

Neumann says that systems are vulnerable because of security breaches. To address these issues, many companies are setting up new security programs. Others are changing their current level of security relative to network and user demands.

One company that has made information security a top priority is Owens-Corning (Toledo, Ohio). With more than 20 plants and 2,000 users worldwide, the company needs to transmit confidential order entry and accounting information back and forth across the network to HP systems at corporate headquarters. Internet access is currently under evaluation, according to Jan Hertzsch, Information Security manager at Owens-Corning. Two key concerns include keeping the network safe from hackers and ensuring that company employees maintain a proper company image.
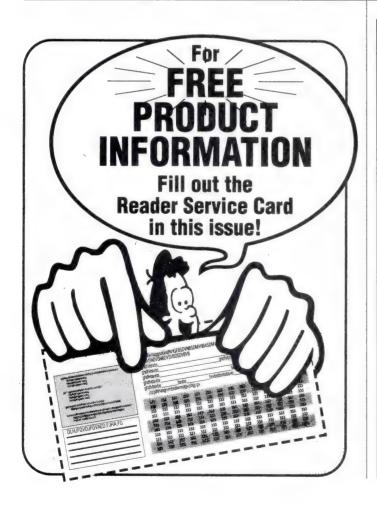
Owens-Corning has implemented a number of procedures to ensure that information is secure at the local and network level. This approach includes only providing employees access to the information their work requires.
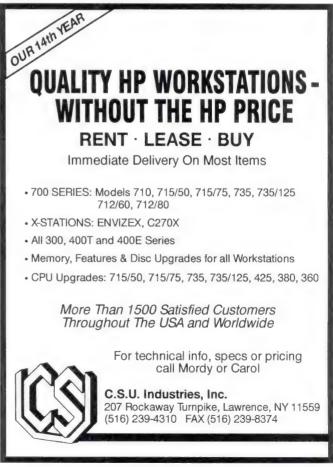
For the Spalding Co. (Chicopee, Mass.), the rush to have a paperless office has heightened the importance of security. CIO Bard White anticipates that this direction means more users will be accessing the system. Spalding's networking environment consists of 25 Novell networks worldwide linked to HP 9000 servers, which are connected to HP 3000s. The dialup network uses Telnet, as well as MCI worldwide to move financial data. There's also a WAN with distributed lines to locations in Canada, Nevada and New York.

The company's network supports approximately 800 users worldwide, including sales representatives and employees at various plant locations, some of whom have remote access privileges. Approximately 10 percent of the sales representatives have laptops, but they have plans to provide laptops to the entire sales force by next year.

The Spalding Co. needs to electronically transmit financial data and technical specifications. However, as a private corporation, ensuring security and preserving confidential information are important in order to maintain a competitive advantage. "Information access, the level of information, and what is being uploaded and downloaded are all concerns," says White. Therefore, the company has implemented an extensive network security program, consisting of five layers of security with no back doors. Additionally, after three logon attempts, users are automatically disabled.

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At Brigham Young University, System Support Manager Carl Jackson has implemented a number of procedures to ensure that only authorized users access the systems at the Provo, Utah campus. The LAN connects different campus buildings and supports approximately 400 users and a variety of equipment including HP 9000 systems. The network also provides Internet access.

To ensure that only authorized users access the machines, Brigham Young University has implemented special password procedures. Other security precautions include a restricted user access, an Internet firewall and limited remote access privileges.

The university is migrating from a mainframe to a UNIX environment, and is looking to provide even more security on the UNIX systems. One way is by implementing Computer Associates' (Islandia, N.Y.) CA-UNICENTER software to log access violations and control system access.

At Portland Community College (Portland, Ore.) IS Director Sam Ellis has addressed Internet security with a firewall, an HP F class server and the elimination of a real connection from inbound traffic. Other security arrangements are in place to address the entire networking environment, including table and applications, as well as MAC layer security.

Ellis is planning an Advanced Computing Environment (ACE).

"Our strategic direction is to think in terms of data," says Ellis. "Many existing approaches to security are bound to fail because of transitions that are taking place affecting data access."

A LITTLE ADDED SECURITY

OF COURSE, UNIX WAS never designed with security in mind. However, there are a number of commercially available solutions that enhance security and meet the full spectrum of requirements of open systems users. They include security management software and password encryption tools, ranging from hand-held authentication devices to special cryptographic keys. Additionally, BLS versions of the HP-UX operating system address the needs of users who must comply with federal security mandates.

In addition to a good plan, there are a number of different products available on the market which helps to prevent unwanted visitors from accessing your system.

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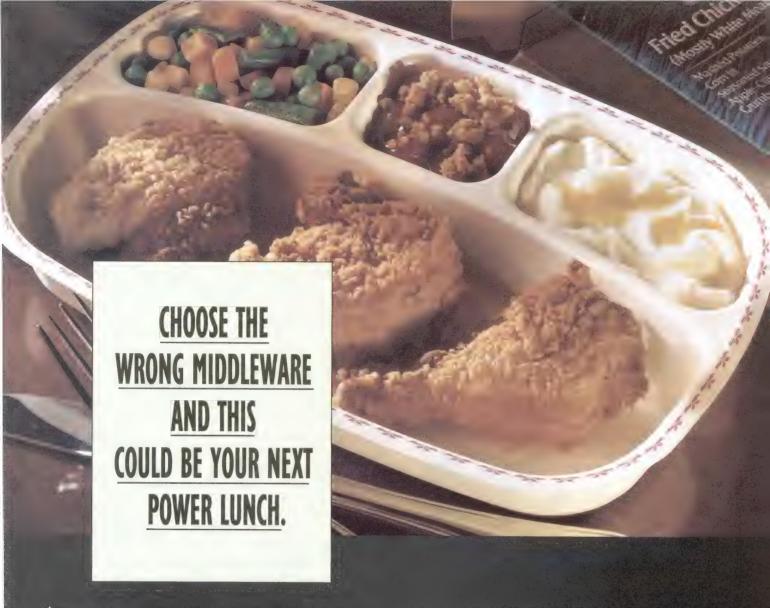
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Qualix Corp.'s (San Mateo, Calif.) UniShield also provides centralized access security for the UNIX environment. UniShield allows homogeneous networks to be managed from a single point, and features product monitoring and control features. The company has announced plans to support the HP-UX environment this fall.

There are now a number of commercially available authentication types of products that can be used to encrypt sensitive, confidential data. They include Digital Pathways' (Mountain View, Calif.) Secure NetKey, a hand-held authentication calculator; Security Dynamics' (Cambridge, Mass.) Secure ID (complete turnkey systems), which provides a changing number authentication card; Racal-Guardata's (Herndon, Va.) WatchWord and WatchWord II, which provides an authentication calculator; and Enigma Logic's (Concord, Calif.) SafeWord, a card authentication calculator that supports one-time passwords.

Password protection is an area of major concern to network administrators. Guardian from DataLynx Inc. (San Diego, Calif.) forces users to update passwords on a regular basis. It uses an internal dictionary to automatically generate easy-to-remember combinations, while another invalid password dictionary disallows predictable passwords. In the event of a security breach, users are forced to change their passwords the next time they login. It is available for most UNIX systems including HP-UX.

Another password protection product is SQL<>SECURE from BrainTree Technology Inc. (Norwell, Mass.). SQL<>SECURE identifies security vulnerabilities and secures database passwords in client-server environments. SQL<>SECURE is especially valuable in environments with non-secure clients, such as PCs, that log directly into the database. The password client checks allow users to securely change their passwords.

Another method of deterring unwanted snooping is to encrypt messages and passwords during transmission. NetLOCK from Hughes Aircraft Co. (Fullerton, Calif.) is a software-based, multilayered security for networks of HP workstations. NetLOCK is installed at the IP layer of a network stack, where it operates transparently. It ensures that network communications data arrives only at the chosen destination, confidentially and without alteration.

When workstations initiate private communications, NetLOCK automatically generates a public key, which the workstations share to encrypt and decrypt data. Keys are valid for a specified time. After traffic key negotiation, the workstations authenticate themselves to one another by exchanging digitally signed certificates of authentication, at which time data transfers will occur. Once the data is transmitted, NetLOCK inspects the data for alterations by performing security checks and notifies the administrator if a security breach occurred.

With the increasing number of mobile workers, securing remote access is a growing concern. Informer Data Security (Garden Grove, Calif.) recently introduced their Secure Access Management (SAM) software system, a dial-back security sys-

tem with an architecture that isolates incoming phone lines from the host. SAM also works with Hayes Millenium 8000 modem technology to provide management and reporting capabilities.

SAM eliminates the threat of unauthorized individuals gaining access to critical business applications by ensuring that no connection is made with system resources before a remote user's access authorization is verified. Once the user's ID and password information is verified, the system calls the user back at an authorized telephone number. An optional pass-through module that allows secure direct dial-in access also is available. Once access is granted, data flows directly from the modem line to the host (without passing through SAM) at data transfer rates up to 230.4 Kbps. SAM also supports an unlimited number of lines.

Another problem that often occurs with remote access is the introduction of a virus to the corporate system. With InocuLAN V3.0 from Cheyenne Software Inc. (Roslyn Heights, N.Y.) the likelihood of damage to off-site corporate data or accidental infection to the corporate environment is reduced. It is used with Cheyenne's ARCserve to provide scanning capabilities during an automated backup and restore process to ensure virus-free archive files. Version 3.0's rules-based scanning engine, used in clients and servers, identifies over 3,000 viruses. It is capable of recognizing 90 percent of the known viruses including boot, file, stealth and polymorphic variants. Additionally, up-to-date protection is available through the "GET-BBS" feature, an NLM that provides automatic downloading of the latest virus signature files from Cheyenne's BBS.

If you are about to jump onto the Information Superhighway by establishing an Internet connection but are not quite sure if your system is secure enough, you might want to check out HPC Consulting (St. Claire Shore, Mich.), a company which provides comprehensive computer security analysis and correction services to users in North America.

HPC does security audits of servers, networks, client workstations, firewall machines and direct Internet connections. Clients can request a single, comprehensive, remote audit, a single on-site audit (including inspection of hardware and software) or a continuing series of routine audits to maintain high-level security. HPC's experts can implement repairs to identify security flaws in areas such as E-mail, gateway servers, login files, network interconnects and password files.

Users also can take advantage of public domain software. For example, available via anonymous ftp from info.cert.org in the pub/tools directory are TCP daemon wrapper programs that provide additional logging and access control security.

Sam Horowitz, manager of client-server network tools at HP, points out that the nature of network security is changing. "The notion in the past was that with an adequate firewall you are safe, but with the ever increasing usage of Internet there are more holes in networks and unauthorized modem access."

According to Horowitz, one trend is to incorporate security at the application level. Such is the methodology used by the Distributed Computing Environment (DCE), which is providing services at the application level for password authentication.

Finally, if the unspeakable happens, and your network or system has been compromised, contact Computer Emergency Response Team (CERT; Pittsburg, Pa.), which monitors and publishes security advisories via the Internet at cert@cert.org, or by phone at (412) 268-7090 (24-hour hotline). CERT personnel are available from 8:30 a.m. to 5 p.m. EST and are on call for emergencies during other hours.

CERT also publishes a moderated mailing list, which is available on USENET News as comp.risks or via e-mail subscription for Bitnet users. Past advisories, information about FIRST representatives, and other information related to computer security are available via anonymous ftp from info.cert.org.—*Paula Jacobs is a marketing consultant and writer based in Framingham, Massachusetts. She can be reached at pjacobs@world.std.com. Deborah Schwartz is HP Professional's Assistant Editor. She can be reached at schwartzd@cardinal.com.*

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George A. Thompson

Straightening Out Standards

In our efforts to make HP Professional an instrumental IT tool for our readers, we are now devoting a column to standards and interoperability issues. And with your help and a little luck, it will survive its maiden voyage.

With so many standards and so little time, I thought a quick run down on some of the industry standards would be an appropriate way to start.

With the HP/Intel announcement this past July, the vague outline of still another CPU architecture appeared on the horizon. HP-UX on Intel? DOS/Windows on PA-RISC? Who knows?

The two companies made it clear: it was a statement of technology direction. But like good intentions, technology directions can sometimes lead to product hell. Anyone remember ACE?

In April 1991, the Advanced Computing Environment (ACE) came out of a coalition among Compaq, DEC, MIPS, Microsoft and Silicon Graphics (SGI), and a number of other companies. ACE was a UNIX-based strategy designed to run on the MIPS and Intel CPU architectures. That was when DEC was hawking OSF/1 on MIPS-based boxes (and just before SGI acquired MIPS) and Microsoft began hawking Windows NT, just after its "falling out" with IBM.

Well, now we know (if we didn't then). OSF was never meant to be an operating system, MIPS was never meant to be a commodity CPU and Windows NT was never meant to replace UNIX. Compaq, now on its way to replacing IBM as the No. 1 PC vendor, got cold feet and dropped out not long after ACE was formed. DEC, of course, hasn't fared as well. Alpha may be the fastest chip on the planet, but DEC's Alpha/Windows NT combination isn't a volume product. And the PowerPC architecture is more important to Apple and Motorola than IBM, which has plenty of its own Intel and RISC CPUs to deal with.

CORBA, CORBA, CORBA

The Object Management Group's (OMG) CORBA 2.0 specification (submitted by BNR, DEC, ExperSoft, HP, IBM, Iona Technologies, OSF and SunSoft) is well on its way to being adopted by the end of 1994. However, publication of the official spec will not occur until sometime in 1995. Whereas the CORBA 1.1 spec only guaranteed *portability* for object request brokers (ORBs), CORBA 2.0 will allow ORBs to talk with one another.

Microsoft, although an OMG member, has been a high profile CORBA holdout. Microsoft's Object Linking and Embedding (OLE) technology is not CORBA compliant. DEC (also an OMG member) and Microsoft have embedded OLE in their object model COM (Common Object Model). But CORBA and

COM objects are not interoperable. According to the OMG, some enterprising software vendors have demonstrated CORBA-to-OLE bridges to solve the problem. But in light of complaints from corporate customers and software developers, Microsoft may be reconsidering its recalcitrant position.

INTERNETWORKING

Hubs, routers, bridges and brouters all help you talk LAN-to-LAN or LAN-to-WAN. East met West and intelligent hub met router, when West Coast-based Synoptics and East Coast-based Wellfleet decided to merge. Plans exist between the two companies for ATM, Fast Ethernet and CDDI.

In August, HP and Wellfleet signed a non-exclusive strategic agreement through which HP will offer and service Wellfleet's complete line of internetworking products. Although HP has their own line of routers, they are now in a position to offer the Wellfleet products as well.

But more importantly, Wellfleet has established 7 x 24 support and is taking advantage of HP's extensive support network here in the United States as well as overseas. It will be a complimentary transition because HP already services Synoptic products as the Synoptics/Wellfleet merger moves forward, according to Martha Schaefer, spokesperson for Wellfleet.

Speaking of LANs, in March 1994, the 100VG-AnyLAN Forum was formed to promote the IEEE's 802.12 specification for 100 Mbps Ethernet and Token Ring environments. The vendor-independent organization includes AT&T Microelectronics, HP, IBM, Optical Data Systems Proteon and Ungermann-Bass. The Forum's objectives are to share information, support multivendor application development and coordinate interoperability testing. The Forum also will address related technologies like ATM, FDDI, MPEG and SNMP.

E PLURIBUS UNIX — FINALLY

Spec 1170, the single UNIX specification called for by COSE last September, is now closer to adoption. This past July, X/Open Ltd. announced the formal completion of the Fast Track process for the specification which will now pass from the sponsoring group (that includes HP, IBM, Novell, OSF and Sun Microsystems) to X/Open.

System vendors wanting to develop X/Open UNIX branded products that conform to the Spec 1170 standard are required to obtain a copy of the appropriate tests to verify compatibility. According to X/Open, products that conform to the standard will support the majority of existing UNIX applications without change.

STANDARDS GOING GLOBAL

And just when you thought it was safe, the American National Standards Institute (ANSI) called for a greater U.S. focus on global standards. ANSI is establishing an Information Infrastructure Standards Panel (IISP) within the national voluntary standards system to support the rapid development of the national and worldwide electronic superhighway.

For ANSI president, Sergio Mazza, who is urging American businesses to get involved in the standards development process, information standards represent global market access, strategic corporate advantage and a cooperative relationship with regulatory agencies.

These are only a small sampling of the standard stories waiting to be told. Have I piqued your curiosity? Good. So tell me about it. Which standards concern you most? Are you playing by the rules, only to find standards the bane of your existence?

Standards, after all, are anything but static. And everyone has an opinion. Like death and taxes, standards are painful and can't be avoided. So let me know what you're thinking and, more importantly, how you feel about the standards that are shaping your IT decisions.

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UNIX   Miles B. Kehoe

Working In Mosiac

U nless you've been hiding in the Himalayas,

you've probably heard more about the Internet, or the Information Superhighway, than you ever wanted to hear. And, if you haven't used the net in a while, you might wonder what all the excitement is about. After all, how exciting can character-based Telnet sessions be?

To paraphrase an old commercial, if you haven't used the net recently, you haven't used the net. Telnet sessions still abound, and hundreds of sites offer useful information via telnet connections. File transfers and downloads are still popular via ftp. However, searching for information is getting much easier, what with Archie and Gopher servers, and Veronica and Jughead search agents. And one area of the net that has seen incredible growth is the web.

MOSAIC OF INFORMATION
The World Wide Web, simply called "the web" by most users, is a system of interlinked information accessible through a consistent, simple interface. Originally developed at the CERN research center in Switzerland, the web has become an almost universal method of publishing information on the net.

Perhaps the most popular interface to the web is the Mosaic user interface, developed at the National Center for Supercomputer Applications (NCSA) at the University of Illinois at Urbana-Champaign. Mosaic displays formatted textual information with embedded graphics and hypertext links. By clicking on a link, usually an underlined section of text (not unlike Microsoft Windows Help screens), Mosaic links you to a new page of text. Thus, you don't need to read a document sequentially: you can hop around using the links pre-defined in the document by its author.

When you first start Mosaic, you see the default Mosaic "home page" located at the University of Illinois. It includes links to a number of other pages located at the University of Illinois, as well as links to other documents and home pages at other sites. In fact, each link represents a document somewhere on the net. When you click on a link, your local copy of Mosaic establishes a connection to the site where the link is located, downloads the file to your system, and displays the document along with its links.

As you might imagine, Mosaic is a heavy user of net resources. Although as a front-end, it provides easy access to an entirely new audience for networked information. To really take advantage of Mosaic, you need a system with a GUI — X windows on HP-UX or Microsoft Windows — and a TCP/IP connection to the net. If your site is already on the net, you're Mosaic-ready. If you don't have a network connection, consider establishing a serial link Internet protocol (SLIP) or point-to-point protocol (PPP) connection from your workstation to a public-access Internet provider using a high-

speed modem. But even at 14.4 Kbps, Mosaic runs slow enough to frustrate even the most patient person.

Once you have the network hook-up, all you need is the software. You can download the source and the executable files from a number of sites on the Internet. The primary site is the University of Illinois, where Mosaic was developed. But, because Mosaic is public-domain software, it can be freely distributed and is available at many other sites. You can probably get a compiled copy of Mosaic from your HP Systems Engineer or from Interex.

To copy the files from the University of Illinois, use ftp to access ftp.ncsa.uiuc.edu. You'll find the HP-UX binaries in directory /Web/Mosaic-binaries/Mosaic-hp700.gz. Note: this file is compressed using the Gnu Zip compression utilities. You can ftp the Gnu Zip utility from prep.ai.mit.edu in the /pub/gnu directory. The Microsoft Windows version of Mosaic is in the /PC/Mosaic directory at ftp.ncsa.uiuc.edu. The latest version as of this writing is wmodA6r1.zip, and can be uncompressed using standard PKUNZIP.

HOME PAGES

Once you have downloaded Mosaic and have it ready to run, you will want to start locating some interesting sites. Several companies and organizations have created Mosaic-compatible web documents that describe their services or products. The "topmost" of these pages — sort of a table of contents for a given site — is called the "home page."

HP has a home page which you can reference in Mosaic as http://www.hp.com. The http is an acronym for "hypertext transfer protocol," and defines the web server for a site, just as ftp defines a file transfer server. When you link to the HP home page, you will find a number of other links in and around HP, including the Workstation Systems Group and the SupportLine Services. Using these documents, you can look for the latest news from HP, and even search the knowledgebase right from your workstation.

Other home pages of interest include Microsoft (http://www.microsoft.com), Adam Curry's former MTV home page, now http://metaverse.com and the ulti-

mate response to MIT's Internet soft drink machine, the University of Cambridge Trojan Room Coffee machine. Check the latter to see a digitized image of the coffee pot on the other side of the Atlantic Ocean — just in case you're curious.

Once you get Mosaic up and running, you'll have a great starting point to explore the Internet. You may want to create your own home page, either for your company or for yourself. There's lots of information out there: happy hunting.
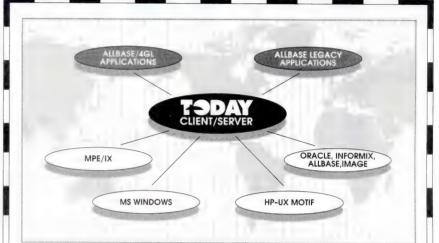
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Tim Cahoon

Taming The Wild Network

This past June, HP ventured into the jungle of network management products. There is a new release of HP OpenView Operations-Center, an expanded OpenView storage management strategy, software distribution and OpenView-integrated print management. HP's OmniBack II has been completely rebuilt, making it faster, but also completely integrating it with the HP OpenView OperationsCenter product. According to Gordon McKinney, HP OpenView program manager, OmniBack II starts off with the concept of Backup Domains for administration and control of your data. Backup Domains are a collection of systems and devices that a user or group of users can access. Through the flexible security system, you delegate what users do within the Backup Domain.

You create centralized backup administrators overseeing many remote sites, local administrators overseeing their one site or end-users with the authority to backup and restore their own files. Because backups can occur across the network, data encryption also is available. This feature is modular so it can be replaced with your own version if desired.

OmniBack II supports a large variety of devices which can be on the system being backed up or located across the network. These devices work in parallel (up to 25 at one time) to provide tremendous backup speed. Backup device support also has increased with the addition of autochanger units along with optical, 3480, 4mm and 8mm units.

To further decrease backup time you now have the choice of doing a "raw" IMAGE disk backup instead of the traditional file system backup. Unlike many "raw" backups which are good only for restoring the entire file system, OmniBack II actually allows you to restore individual files. You can mix-and-match backup techniques to meet your needs.

Backup verification is done off-line to further decrease backup time. OmniBack II shows what was stored on each tape as well as statistics on the backup/restore processes. This is invaluable for auditing and planning purposes.

OmniBack II has added support for AIX, Solaris, NetWare servers and NetWare-supported clients. It also is integrated with Oracle's and European SAP's R/3 database online backup APIs to provide 100 percent system availability.

HSM THROUGH OMNISTORAGE

Hierarchical Storage Management (HSM) is now offered through OmniStorage, which also is integrated with OperationsCenter. OmniStorage HSM features the automatic migration of files from magnetic disks to optical disk libraries. Optical libraries make use of a jukebox hardware device which also can be shared with OmniBack II. The process is transparent to users.

Previously relegated to the work-group, OpenSpool, has now been enhanced to support the enterprise. OpenSpool can serve as a print backbone providing end-to-end responsibility for print requests across the WAN. Once output is queued for a remote site, users watch as the request is received, queued and then printed at the remote system. Your printouts no longer disappear without explanation.

OpenSpool supports UNIX-type printing but other systems can take advantage of its functionality through additional software. Novell users can install Novell's FlexIP on their server to provide UNIX print capability. HP 3000 Series 900 users can install NSD's TranSpooler product. Support also is offered for printers and plotters directly attached to the network.

THE BUSINESS OF NETWORKS

With HP OperationsCenter you can find out if the backup at the remote site is done, or if the line printer in Istanbul is up and why the management report hasn't printed there yet. OperationsCenter accomplishes this through the use of Intelligent Agents residing on hosts, SNMP queries, logfile extraction and various other data gathering activities. Then, all of this data is gathered into the central console for review by your operators.
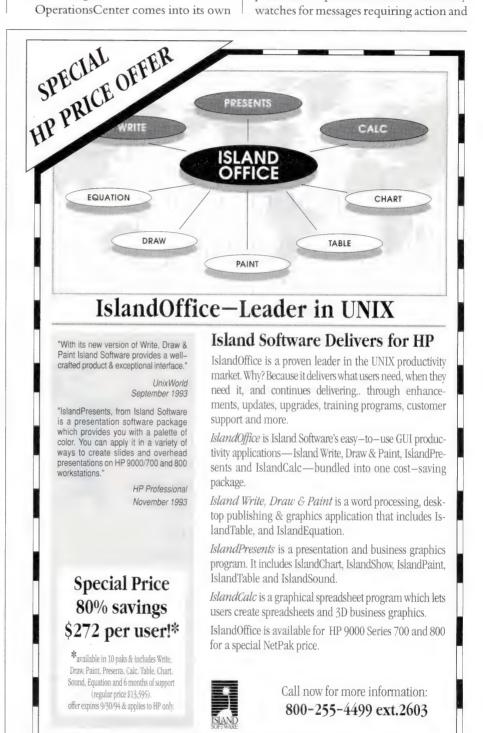
Typical sites often have different operators trained to monitor and respond to problems in different areas. Or certain resources might be dedicated to monitoring your SNA hosts and network. Still others may provide support for certain management groups within the corporation. To support these different requirements, OperationsCenter gives each operator their own customizable view of the network using separate workstations.

Graphic displays of information show an operator's area of responsibility, and as alerts are triggered, icons are highlighted. Textual messages are displayed in the Message Browser, which consolidates all of the messages coming into OperationsCenter that could be informational as well as alerts.

Operators can apply message filters to eliminate information overload and only provide them with what they need. In previous versions there were complaints that the Message Browser was very slow. The new version provides a four-fold increase in speed. The Message Browser also displays actions taken by OperationsCenter or users in regards to any or all of the messages.

OperationsCenter comes into its own with the use of integrated applications such as OmniBack II and OpenSpool. Besides providing a higher degree of communications between products they all bring pre-configured actions to most of the common problems with running applications. OperationsCenter constantly watches for messages requiring action and

if defined to do so, takes action immediately. Now when a printer becomes unspooled, the OperationsCenter software can automatically initiate actions to restart the spooler.

No longer do you get phone calls from users because of these simple problems. If OperationsCenter Intelligent Agents are supported on remote computer systems, they can be programmed to initiate recovery procedures locally without interacting with the central console. HP is working with Oracle, Unison-Tymlabs, Legent and Ki to integrate their products into OperationsCenter.

Applications that are not integrated into OperationsCenter are manually configured or you program options which are initiated manually by your operators. This would be similar to a macro. This macro feature is great to use where automatic actions can not be taken — possibly due to security issues — and manual intervention is required.

THE PUSH/PULL OF DISTRIBUTION

The last product on the list is HP OpenView Software Distributor. This product supports the distribution of software on HP-UX, Sun Solaris, IBM AIX, Novell NetWare, Microsoft LAN Manager, DOS and Windows machines. UNIX systems are managed from an HP-UX workstation, and a PC server is used in the PC environment.

As the administrator you select how software distribution will work. You elect to "push" software to all systems when you are ready to update them, or you elect to have the stations "pull" the software when they are ready, or you configure standalone updates. Files are compressed on the distribution server to save space and when sent through the network to save bandwidth. When files are configured to be sent, the Software Distributor ensures that all dependencies are in place on the target system before the update.

HP's approach to software distribution has become the basis for the IEEE POSIX 1387.2 Software Administration Standard. This should help assure a long life for the product. Even though this particular product is not totally integrated into OperationsCenter it can be accomplished fairly easily.

If you manage a large group of sites you should take a look at OperationsCenter and its applications. Because of its integration with OpenView and its modular approach to adding applications, it should be considered by any company looking to manage remote or very large local sites.

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WAnna Be Insignia.

We Finally Figured Out What Wabi Means.

	SoftWindows	Wabi
Number of compatible applications you can run	Thousands	13 ?
Networking capability	Yes — supports NetWare, LAN Manager, Banyan VINES, TCP/IP	Not yet
Number of UNIX platforms you can run them on	Sun, HP, IBM, Digital, and SGI	3 ?
Availability	Shipping	On & Off
Microsoft Windows 3.1 and MS-DOS 6.21 included	Pre-installed	No

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John P. Burke

Square Peg, Round Hole?

W hen migrating from MPE V to MPE/iX, one of the things I most looked forward to was eliminating many of our ad hoc, special purpose, 30 minute wonder, SPL utility programs. It has long been a prime tenet of good system administration to avoid such programs because: they are usually poorly documented, haphazardly constructed and difficult to maintain; the program, and the source, has the nasty habit of disappearing at the worst times; and they are easy to forget about when you port to another machine.

Eugene Volokh of VESOFT, and MPE X fame, pioneered the concept of MPE programming in his 1983 paper of the same name. He developed many clever ways to determine simple things that those familiar only with MPE/iX take for granted. For example, how **CIERROR JCW** and **LISTF** could be used to determine the existence of a file and how **CIERROR** and **RESUME** could be used to determine whether a UDC was being called from a job or a session. Of course, with MPE/iX we have

```
finfo("filename","exists")
```

to determine the existence of a file and the system variables **HPINTERACTIVE** or **HPJOBTYPE** to determine job or session mode.

Volokh also showed how, by using only **LISTF ;*fileref**, **FCOPY**, **EDITOR** and the **STDIN=** and **STDLIST=** parameters of the **RUN** command, you could do some pretty amazing things. Of course, they became almost as difficult to maintain as the utility programs they were meant to replace, but the technique was portable and required no conventional programming.

Spoolfile management is very important and has a significant drain on people resources. Many years ago, we realized we needed a way to quickly create a list, with descriptive information, of all spoolfiles for a particular customer (user ID) or a list of all spoolfiles with a particular name (**$STDLIST** or **REGISTER**). It also would be helpful to be able to sort the list by user or by spoolfile name. We came up with a UDC combining some of Volokh's ideas with SPOOK and a little SPL program. It did the trick for many years.

When we migrated to MPE/iX, we faced the problem of the absence of SPOOK. However, this proved a minor inconvenience because the Native Mode Spooler (NMS) had commands or utilities that equaled and in many cases surpassed the functionality formerly provided by SPOOK. The resulting command file, along with some examples, is shown in *Figure 1*. SOU stands for "Show Output by User." A similar command file called SON sorts the display by spoolfile name.

After A Network Problem Threatened To Shut Down His Company's Mission-Critical Applications,
WHAT DID DAVE DO?

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Note: we are still using a program to sort and format the output from the **LISTSPF** command. The value of **PARM** determines sort order.

Once things settled down, I set about trying to eliminate the program SHOWOUT. SOU1 and SOU2 (see *Figure 2* and *Figure 3*) are the result. These are examples of the extremes to which many people have taken CI programming.

The addition of command I/O redirection (CIOR) to MPE/iX made it possible to emulate equivalents to **FOR ALL FILES IN "fileset" DO** and **FOR ALL RECORDS IN "filename" DO**. Lack of these constructs is the most glaring weakness in MPE/iX CI programming.

SOU1 and SOU2 illustrate the two standard approaches to this emulation: SOU1 uses message files and SOU2 uses XEQ file with a constructed file as redirected input.

How do SOU, SOU1 and SOU2 compare? In tests on an unloaded HP 3000 Model 918 with 35 spoolfiles in the READY state and no selection performed, the following results were consistently achieved (numbers are CPU seconds):

SOU1.HPXEQ	(msg. files)	23
SOU2.HPXEQ	(I/O re-direct.)	8
SOU.HPXEQ	(utility program)	1

Note: the utility SHOWOUT is even a Compatibility Mode (CM) program.

The numbers are presented strictly for comparison purposes, to show the relative performance of the three approaches. Careful re-coding of SOU1 or SOU2 might knock a few percent off these figures but the relative positioning would not change. The message file approach, while arguably the most esthetically pleasing, is clearly the big loser in the performance derby. Message file code goes native mode (NM) in MPE/iX 5.0, but my bet is that it will not make enough difference in the results to change the order of finish (I'll report the results as soon as I install 5.0). The reason is that most of the extra processing time is consumed by the repetitive opening and closing of the message files.

An amazing amount can be done with

FIGURE 1

```
parm user=@.@,filename=@
purge spookout,temp > $null
file spookout;rec=-80,,f,ascii
listspf @;seleq=[owner=!user and filedes="!filename" and &
(state=ready or state=print)];detail > *spookout
run showout.pgm.ccc;parm=1

:XEQ SOU.HPXEQ

DFID  JOBNO FNAME    STATE  PR #C JOBNAME   OWNER        SECTORS LINES PAGES
6743  S5625 SABCKS   READY  4  1            A45310.CCCINC    48   399    ~7
6744  S5625 SABREG   READY  4  1            A45310.CCCINC    32   135    ~3
6746  J2838 $STDLIST READY  9  1  FOLWKEND  A45400.CCCINC    16    87    ~2
6747  J2838 FOL002   READY  2  1  FOLWKEND  A45400.CCCINC    32    99    ~2
6750  J2839 $STDLIST READY  9  1  FOLENDWK  A45400.CCCINC    16    66    ~2
6742  J2835 $STDLIST READY  9  1  ROMLABOR  A45475.CCCINC    48   203    ~4
6777  S5663 TS0716   READY  9  1            A45500.CCCINC    16    70    ~2
6759  S5649 DWNCKS   READY  4  1            A45501.CCCINC   432  1587   ~27
6761  S5649 DWNVOUCH READY  4  1            A45501.CCCINC   128   663   ~12
6762  S5649 DWNTS    READY  8  1            A45501.CCCINC   160   507    ~9
6778  S5660 DWNTAXMO READY  4  1            A45501.CCCINC    16    63    ~2
6763  S5654 RTGTS    READY  8  1            A45550.CCCINC    16    31    ~1
6764  S5654 RTGCKS   READY  4  1            A45550.CCCINC    32   135    ~3
6776  S5654 RTGTAXMO READY  4  1            A45550.CCCINC    16    63    ~2
6767  J2852 $STDLIST READY  9  1  HEPWKEND  A45595.CCCINC    16    80    ~2
6769  J2852 HEP002   READY  2  1  HEPWKEND  A45595.CCCINC    64   191    ~4
6772  J2853 $STDLIST READY  9  1  HEPENDWK  A45595.CCCINC    16    62    ~2

:XEQ SOU.HPXEQ A45400.CCCINC

DFID  JOBNO FNAME    STATE  PR #C JOBNAME   OWNER        SECTORS LINES PAGES
6746  J2838 $STDLIST READY  9  1  FOLWKEND  A45400.CCCINC    16    87    ~2
6747  J2838 FOL002   READY  2  1  FOLWKEND  A45400.CCCINC    32    99    ~2
6750  J2839 $STDLIST READY  9  1  FOLENDWK  A45400.CCCINC    16    66    ~2

:XEQ SOU.HPXEQ ,$STDLIST

DFID  JOBNO FNAME    STATE  PR# C JOBNAME   OWNER        SECTORS LINES PAGES
6746  J2838 $STDLIST READY  9  1  FOLWKEND  A45400.CCCINC    16    87    ~2
6750  J2839 $STDLIST READY  9  1  FOLENDWK  A45400.CCCINC    16    66    ~2
6742  J2835 $STDLIST READY  9  1  ROMLABOR  A45475.CCCINC    48   203    ~4
6767  J2852 $STDLIST READY  9  1  HEPWKEND  A45595.CCCINC    16    80    ~2
6772  J2853 $STDLIST READY  9  1  HEPENDWK  A45595.CCCINC    16    62    ~2
```

FIGURE 2

```
:PRINT SOU1.HPXEQ

parm user=@.@,filename=@
purge spookout,temp > $null
file spookout;rec=-80,,f,ascii;disc=10000;temp;nocctl;msg
purge sortfile,temp > $null
build sortfile;rec=-180,,f,ascii;disc=10000;temp
listspf @;seleq=[owner=!user and filedes="!filename" and &
  (state=ready or state=print)];detail > *spookout
while finfo("spookout","eof") > 0 do
  input line_1 < spookout
  if lft(line_1,1) = "#" then
    input line_2 < spookout
    setvar sort_line line_1 + line_2
    echo !sort_line >> sortfile
  endif
endwhile
purge spookout,temp > $null
purge sortparm,temp > $null
purge sortofle,temp > $null
file sortofle;temp;msg
echo input sortfile > sortparm
echo output *sortofle >> sortparm
echo key 63,20;1,8 >> sortparm
echo end >> sortparm
echo exit >> sortparm
sort < sortparm > $null
purge sortfile,temp > $null
purge sortparm,temp > $null
echo DFID  JOBNO    FNAME STATE  PR  #C   JOBNAME      OWNER  S&
       ECTORS LINES    PAGES
echo
while finfo("sortofle","eof") > 0 do
  input line_1 < sortofile
  setvar _dfid str("!line_1",3,6)
  setvar _jobno str("!line_1",12,7)
  setvar _fname str("!line_1",21,9)
  setvar _state str("!line_1",50,6)
  setvar _pri str("!line_1",31,2)
  setvar _copies str("!line_1",37,4)
  setvar _jobname str("!line_1",101,9)
  setvar _owner str("!line_1",63,17)
  setvar _sectors str("!line_1",120,7)
  setvar _lines str("!line_1",130,6)
  setvar _pages str("!line_1",137,5)
  setvar out_line "!_dfid" + "!_jobno" + "!_fname" + "!_state" + &
              "!_pri" + "!_copies" + "!_jobname" + "!_owner" + &
              "!_sectors" + "!_lines" + "!_pages"
  echo !out_line
endwhile
purge sortofle,temp > $null
deletevar line_1,line_2,sort_line,out_line
deletevar _dfid,_jobno,_fname,_state,_pri,_copies,_jobname,_owner,&
_sectors,_lines,_pages
reset spookout
reset sortofle
```

CI programming and CIOR; more than should be done for performance reasons unless:

- It is used to apply a relatively straight forward function to filesets (I use it for wildcard PURGE and COPY).

- It will have a short life span and will not become part of your routine operations like my SON and SOU.
- Circumstances make the maintenance of a suite of utility programs impractical (you have no compilers available).

Of course, all of this may change with MPE/iX 5.0's POSIX.2 shell — but that's another column.

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burke@cardinal.com

FIGURE 3

```
:PRINT SOU2.HPXEQ

parm user=@.@,filename=@
purge spookout,temp > $null
file spookout;rec=-80,,f,ascii;disc=10000;temp;nocctl
purge sortifle,temp > $null
build sortifle;rec=-180,,f,ascii;disc=10000;temp
listspf o@;seleq=[owner=!user and filedes="!filename" and &
    (state=ready or state=print)];detail > *spookout
setvar file_ctr 0
setvar file_lgth finfo("spookout","eof")
SOU2A.HPXEQ purge spookout,temp > $null
purge sortparm,temp > $null
purge sortofle,temp > $null
file sortofle;temp;msg
echo input sortifle > sortparm
echo output *sortofle >> sortparm
echo key 63,20;1,8 >> sortparm
echo end >> sortparm
echo exit >> sortparm
sort  < sortparm > $null
purge sortifle,temp > $null
purge sortparm,temp > $null
echo DFID  JOBNO    FNAME STATE PR      #C       JOBNAME     OWNER      S&
    ECTORS LINES    PAGES
echo
setvar file_ctr 0
setvar file_lgth finfo("sortofle","eof")
SOU2B.HPXEQ purge sortofle,temp > $null
deletevar line_1,line_2,sort_line,out_line,file_ctr,file_lgth
deletevar _dfid,_jobno,_fname,_state,_pri,_copies,_jobname,_owner,&
    _sectors,_lines,_pages
reset spookout
reset sortofle
```

```
:PRINT SOU2A.HPXEQ

while file_ctr < file_lgth do
    input line_1
    setvar file_ctr file_ctr + 1
    if lft(line_1,11) = "INPUT SPOOL" then
        return
        endif
    if lft(line_1,1) = "#" then
        input line_2
        setvar file_ctr file_ctr + 1
        setvar sort_line line_1 + line_2
        echo !sort_line >> sortifle
        endif
    endwhile
```

```
:PRINT SOU2B.HPXEQ

while file_ctr < file_lgth do
    input line_1
    setvar file_ctr file_ctr + 1
    setvar _dfid str("!line_1",3,6)
    setvar _jobno str("!line_1",12,7)
    setvar _fname str("!line_1",21,9)
    setvar _state str("!line_1",50,6)
    setvar _pri str("!line_1",31,2)
    setvar _copies str("!line_1",37,4)
    setvar _jobname str("!line_1",101,9)
    setvar _owner str("!line_1",63,17)
    setvar _sectors str("!line_1",120,7)
    setvar _lines str("!line_1",130,6)
    setvar _pages str("!line_1",137,5)
setvar out_line     "!_dfid" + "!_jobno" + "!_fname" + "!_state" + &
                    "!_pri" + "!_copies" + "!_jobname" + "!_owner" + &
                    "!_sectors" + "!_lines" + "!_pages"
echo !out_line
endwhile
```

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new Products

SOFTWARE

Visible Systems Ships Visible Analyst Workbench

Visible Systems Corp. shipped Visible Analyst Workbench 3.5 which includes an OpenCASE repository platform, a user customizable repository and enhanced SQL reverse engineering capabilities. As part of its OpenCASE strategy, Visible Analyst's Workbench Repository can be hosted on multiple SQL database management systems.

Other enhancements improve the user interface (new icons and display options), diagram drawing and editing features, repository navigation and COBOL source code generation. In addition, WATCOM is now on the list of supported SQL RDBMSs. Contact Visible Systems Corp., 300 Bear Hill Rd., Waltham, MA 02154; (617) 890-2273.

Circle 400 on reader card

CXSOFT Offers Software For HP 9000 Series 800s

CXSOFT announced it will offer four software solutions designed to boost productivity and speed for compute-intensive scientific and engineering applications on the HP 9000 Series 800 integrated server family.

The software, already available on HP 9000 Series 700 workstations, allows numerical applications to run faster, cluster systems to run in parallel and users to realize levels of performance and reliability previously not available.

The new products include: ConvexMLIB, a math library with the highest performance numerical routines available for HP systems; LSF, an advanced, user-friendly load balancing technology; ConvexPVM, a parallel programming tool for clusters of systems; and ConvexNQS+, an efficient batch queuing system.
Contact Convex Computer Corp., 3000 Waterview Pkwy., Richardson, TX 75080; (214) 497-3061.

Circle 399 on reader card

OEC Introduces DCE-based Encompass

Open Environment Corp. (OEC) introduced Encompass, a highly adaptive distributive application development framework.

Encompass provides a framework that makes DCE development fast, safe and easy by supporting disparate computers, databases, GUIs and legacy applications.

With its Asynchronous RPC (Remote Procedure Calls) capability, Encompass also enables average Windows PCs to be multitasking and interactive in a DCE environment. RPCs enable applications to perform tasks using processes located on different computers.

Encompass is available for HP-UX, DEC OSF/1, IBM AIX/6000 and OS/2, Sun Solaris, Microsoft Windows and Macintosh. It works with the following relational databases: Oracle, Sybase, Informix, Ingres and DB2. Native support for development languages and environments includes Microsoft Visual Basic, Powersoft's PowerBuilder, COBOL, C, C++ and Smalltalk.

Prices begin at $16,000 per developer and $2,000 per server runtime license.
Contact OEC, 25 Travis St., Boston, MA 02134; (617) 562-0900.

Circle 398 on reader card

IBI Announces EDA/SQL Release 3

Information Builders Inc. announced EDA/SQL Release 3. Release 3 architecture is divided into eight services packaged in five specialized server configurations. Base process services include operating systems exploitation, independent server processes, systems management and catalog support. Network support improves server responsiveness and fault tolerance. Relational database services enable high performance read/write operations against specific RDBMSs along with other capabilities. Non-relational data services offer optimized SQL translation support and SQL update of non-relational data.

Stored procedure services have been upgraded to process the most complex, performance-oriented applications. Hub services offer distributed processing capabilities and provide a single connection point for location transparent access to enterprise-wide, heterogeneous data sources. Copy management enables EDA/SQL to design and execute custom procedures using graphic-based utilities for copying data into local relational FOCUS databases from any EDA supported database or file. Governing services are provided through EDA/SQL's SMART-MODE pre-emptive query governer which enables customers to collect statistics regarding data usage and set query-governing thresholds, based on installation parameters.
Contact Information Builders Inc., 1250 Broadway, New York, NY 10001; (212) 736-4433.

Circle 397 on reader card

RAD Technologies Produces Two Multimedia Products

RAD Technologies announces two new multimedia authoring systems — VideoCam 1.0 and ScreenPlay 2.1.

VideoCam 1.0 is for capture, editing and playback of MPEG digital video on Sun Microsystems and HP workstations, and Microsoft Windows. It provides real-time capture and compression in either MPEG or Motion-JPEG formats, and ships with standard VideoCam Players for software-only playback on any platform. Price is $2,495 and includes all recording, compression, editing and playback software. Additional VideoCam Players can be purchased individually for $100 each.

ScreenPlay 2.1 is a screen video presentation software for recording, editing and playback of "live" software demonstrations, training tutorials, and product and marketing presentations. It is available for HP-UX 9.03, SunOS 4.1 and Solaris 2.3 operating systems. ScreenPlay 2.1 "movies" can be

delivered on CD-ROMs, via the Internet or as multimedia mail messages. Other features include: WYSIWYG TimeLine Audio and Video editing; audio overdubbing with true audio and video synchronization; and a command line API for embedding a ScreenPlay Viewer with documentation, multimedia and database applications. Price is $1,895 for a single user development license. ScreenPlay Viewers are priced at $50 each. Contact RAD Technologies Inc., 2639 Terminal Blvd., Mountain View, CA 94043; (415) 968-4800.

Circle 396 on reader card

Interactive Software Delivers VisualRPW

Interactive Software Systems Inc. (ISSI) released a new system architecture that allows end users to compile reports from multiple databases and operating systems.

The software — VisualRPW — is the first graphical report writer and data manager to use three-tiered architecture. This allows users to access data from multiple databases.

Interactive Software's UDMS 5.0 creates a client-server environment, using the power of the server to connect databases and retrieve, sort and manipulate data before passing it on to the client. From there, the end user can format reports and identify what the final output will contain.

The addition of VisualRPW to the UDMS family extends the benefits across distributed graphical client and server environments, while being completely compatible with reports, forms or exports created with its traditional character-based modules.

UDMS supports HP MPE/iX, VAX/VMS, OpenVMS AXP and multiple UNIX platforms. It also provides simultaneous read/write access to Ingres, Oracle, Sybase, Informix, RMS, Rdb, VAX-DBS, Supra, TurboIMAGE, KSAM, C-ISAM, RS/1 and InfoPlus.

Price ranges from $2,400 to $81,000, depending on the number of clients, servers and database interfaces.
Contact Interactive Software, 7175 W. Jefferson Ave., Ste. 2500, Denver, CO 80235; (303) 987-1001.

Circle 394 on reader card

Tom Sawyer Software Supplies Graph Editors

Tom Sawyer Software Corp. announced a family of portable graph editors that support Borland Object Windows 2.0 for Novell AppWare designed to improve the quality of a wide variety of application programs with

its sophisticated automated object positioning algorithms and data visualization services.

The product supports versions of UNIX supplied with HP 9000, Sun SPARCstation, IBM RS/6000, Microsoft Windows and Windows NT, Macintosh and OS/2.

New features include faster layout libraries, object persistence, new font and color controls, floating and locked toolbar support,

multipage printing, print preview, split-pane editing, drag-and-drop support, subject/view and document/view support and status bars. In addition, graphical objects may own and maintain any number of nested graphs as well as "gadget controls," such as bitmaps, text (single or multiline) and standard windows control. OLE 2.0 support also is planned.
Contact Tom Sawyer Software, 1824B

Fourth St., Berkeley, CA 94710; (510) 848-0853.

Collier-Jackson Announces Vision Shift

Collier-Jackson announced VisionShift, its new generation of client-server applications. The introduction of the VisionShift line leverages the firm's experience with Microsoft Access, Microsoft Visual Basic Programming System, Applications, Edition and the Microsoft Office as a solutions development platform.

VisionShift Accounting includes general ledger, accounts payable and accounts receivable. It will be available starting second quarter 1994. VisionShift Human Resources will be available this summer. Prices range for the entire suite of products range from $16,000 to $60,000.

Also available will be Order Entry and Inventory Control, a line that targets distributors, assemblers and light manufacturers. Contact Collier-Jackson, 3707 W. Cherry St., Tampa, FL 33607; (813) 872-9990.

Signal Technology Releases N!Power

Signal Technology announced the release of Version 1.31 of N!Power for Sun, DEC and HP workstations which features enhancements in graphics, performance and real-time device support.

N!Power is object-oriented software for the development, simulation and deployment of data acquisition and analysis applications. N!Power was designed to be a scientific application framework with an open architecture that follows a client-server model. It's data flow approach synchronizes analysis processing steps and supports visual programming and simulation through block diagrams.

N!Power executes the following user interface mechanisms: block diagrams, application menu forms, pop-up operators, symbolic command language, server mode and user supplied objects.

Customization tools allow mouse point-and-click creation, deletion, modification and manipulation of all forms of user interface. Object-oriented X Windows, 2D/3D graphics and a MOTIF GUI let users visualize and interact with their data.

Prices range from $1,900 for a single end-user run-time license to less than $5,000 for a single developer license with customization tools, graphics, menus and block diagram interface.

Contact Signal Technology Inc., 104 W. Anapamu, Santa Barbara, CA 93101; (805) 899-8300.
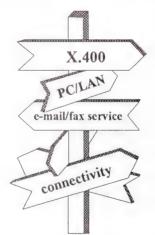
X-Designer 3.2 Enhances
Object-Orientation

Imperial Software Technologies and V.I. Corp. introduced X-Designer 3.2, an enhanced version of the GUI builder. The new version provides increased object-oriented capabilities that allow software developers to reuse objects in current and future interface designs.

X-Designer 3.2 permits developers to define a group of interface elements as a reusable object which then can be instantiated elsewhere in any design. This feature can be used by C and C++ developers.

Since introducing MAC-PAC® OPEN software for UNIX,® there's been some hissing from the competition.

There are a lot of lofty promises made by manufacturing software vendors. But when you consider how little evidence supports them, their claims start to sound a bit inflated.

MAC-PAC OPEN isn't built on a promise. It's built on some of the best business practices of today's industry leaders. It's built on proven

technical architecture for true hardware and database flexibility. It's built on the unsurpassed industry experience of Andersen Consulting.

Which means that MAC-PAC OPEN, available on IBM® AS/400® or UNIX hardware platforms and databases, can actually deliver exactly what manufacturers really need. A robust,

integrated, full-enterprise solution.

So it's no wonder the competition is doing so much hissing.

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Software Products

*For more information on MAC-PAC OPEN, call **1-800-541-7512** or **1-312-507-6588**.*

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CIRCLE 174 ON READER CARD

New features include a toolbar, an optional floating widget palette, user definable widget icons and enhanced widget integration facilities, which allow the invocation of user-defined resource editors.

X-Designer is available on HP 9000 Series 700, SunOS and Sun Solaris platforms. Cost is $3,500 for the first license.

Contact V.I. Corp., 47 Pleasant St., Northampton, MA 01060; (800) 732-3200.

Circle 388 on reader card

VI*Comp Management Enables Sales-Compensation for UNIX

VI*Comp Management Inc. introduced a UNIX version of VI*Comp automated sales-compensation system which enables companies to plan, manage and control their sales-incentive compensation programs. VI*Comp helps compensation professionals calculate commissions and bonuses, design plans, track the plans' effectiveness, and analyze and predict compensation expenses.

Data files used by the PC version also may be accessed by VI*Comp for UNIX.

To ensure security, VI*Comp for UNIX includes multiple levels of password protection.

VI*Comp for UNIX is currently available for HP-UX 9.01 and SCO V5.3. Price begins at $30,000 and varies depending on the number of users and the number of employees on plan.

Contact VI*Comp Management Inc., One Militia Dr., Lexington, MA 02173; (617) 674-2624.

Circle 385 on reader card

Software Interfaces Introduces SQLASSIST 3.5

Software Interfaces announced SQLASSIST Version 3.5 which now generates PostScript output, and allows users to have complete control of fonts for headers and footers, column titles and detail sections. Margins, gridlines, underlines and cell borders can be used along with word wrap options and landscape or portrait layouts to produce more organized, readable reports.

This version also allows direct conversion of report output into native data formats such as The SAS System, RS/1 and FrameMaker. Another enhancement is the upgrade of their AI-based rules facility, which lets end users write complex queries without having to know SQL. Additional data dictionaries also have been updated and maintained by the site administrator as new tables are added and the structure of the data changes.

The product supports Rdb/VMS, DB2, Oracle, Ingres, Informix and Sybase. The character-based and Motif version also are available on HP, VAX/VMS, AIX, Sun and other UNIX variants.

Contact Software Interfaces Inc., 1400 Broadfield, Ste. 600, Houston, TX 77084; (713) 492-0707.

Circle 384 on reader card

HARDWARE

PCMCIA Card Reader/Writers From Coastal Electronics
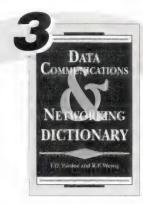
Coastal Electronics announced a line of PCMCIA drives for DOS-based desktop computers. The Little Drive series emulates the common floppy disk drive and allows users instant access to PCMCIA cards and card-mounted hard disks through MS-DOS and Windows.

The Little Drive II (Type II FLASH card drive) is for reading and writing to any Type II FLASH card (Sundisk, HP, ACE Double Flash) or Type III rotating PCMCIA storage device (Maxtor, Integral, Western Digital). The device mounts internally like a 3.5-inch floppy drive and comes with a 16-pin interface card, device management software and cabling similar to the Little Drive PCD.

The Little Drive PCD (rear-socket mount) allows rear insertion only, of all PCMCIA products Type I, II and III in back of the the computer.

The Little Drive II (external) plugs into the parallel port of any DOS computer. There is no need to open your computer. This unit also is portable and can easily be moved between all your computers. It reads and writes to all Type I and II PCMCIA memory products. Contact Coastal Electronics, 5724 La Jolla Hermosa Ave., La Jolla, CA 92037; (619) 459-4148.

Circle 383 on reader card

Newport Systems Unveils LAN²LAN/MPR Remote Office

Newport Systems Solutions Inc. released LAN²LAN/MPR Remote Office, a full function, open, software-based router for remote users who need online access to the corporate network.

LAN²LAN Remote Office provides full router and bridge functionality for as many as four LANs and two WANs. Customers can purchase this product with 128K or T1/E1 Compression, or upgrade later.

The LAN²LAN Remote Office router is a software router than runs on a standard PC or NetWare file server. It also can be used to interoperate with legacy routers.
Contact Newport Systems Solutions, 4019 Westerly Place, Ste. 103, Newport Beach, CA 92660; (714) 752-1511.

Circle 382 on reader card

Analogic Produces SCSI-Based DASM-VIP

Analogic Corp. announced the DASM-VIP Video Image Processor, a marriage of a 24-bit SCSI frame grabber with a DSP image processor. The DASM-VIP acquires, processes and displays color and monochrome video images in a single device.

The DASM-VIP, with up to 16 MB of memory, captures real-time video data from a variety of video sources, including RGB, NTSC and S-Video color sources, and RS-170 monochrome sources. Its Digital Sync-lock circuitry eliminates pixel jitter and assures precision image data from such noisy video sources as VCRs. Video images can be displayed as a single frame or as a sequence of real-time frames.

The DASM-VIP features a 33 MFLOP TMS320C31 DSP that relieves the host computer of imaging tasks.

Price starts at $2,995.
Contact Analogic Corp., 8 Centennial Dr., Peabody, MA 01960; (508) 977-3000.

Circle 381 on reader card

Bytek's Model 2000 Handles Diverse Parts

Bytek Corp. announced a new standalone device programmer for embedded micro-controllers, semiconductor memory and programmable logic devices. The new instrument uses re-programmable gate arrays to handle a wide range of pin-outs (up to 94

Reader Information

This month's issue contains many advertisements for hardware and software products available for your HP systems. Your investment in these products today could mean a more lucrative future for your company. Use the information below to learn more about the advertisers' offerings, then use the reader information card to initiate your direct link to valuable information about these advertisers' products.

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Change management, quality assurance and program testing software. S/COMPARE HARMONIZER, ANALYZER.
Call (800) 825-5858.

ARTECON INC.
CIRCLE 242
Artecon is a leading systems integrator and manufacturer of value-added hardware and software products for the UNIX marketplace. Product lines include: Opticals, Removables, Backups, Storage and Accessories.
Call (800) USA-ARTE, FAX (619) 931-5527.

BERING INDUSTRIES
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Removable mass storage solutions, including hard disk drives magneto-optical erasable drives, and high-capacity tape backup for HP 3000/9000/1000 computers.
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BRADMARK TECHNOLOGIES INC.
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CAMINTONN CORP.
CIRCLE 294
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CENTERLINE SOFTWARE
CIRCLE 274
ObjectCenter is a multiplatform UNIX C/C++ programming environment that provides component level development to maximize the benefits of object-oriented programming in C++.
Call (800) NOW-CNTR

COGNOS CORP.
CIRCLE 117
Cognos provides application development software for HP MPE V, MPE XL and HP-UX platforms.
Call (800) 4-COGNOS.

COMPUTER MARKETING INTERNATIONAL INC.
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Independent distributor of new and refurbished HP Apollo workstations and peripherals. We provide in-house technical support and depot repair services. We are committed to providing 100% customer satisfaction on every order.
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audio symposia in this issue of HP Professional or **Call 1-800-224-HP3K now to register.**

IEM INC.
CIRCLE 122
IEM is the manufacturer of the largest line of HP third-party peripherals. IEM offers affordable solutions for the HP environment. IEM's product line includes 4mm tape drives and autofeeders, 8mm tape drives, autofeeders and carousels, QIC tape drives, optical drives (WORM, MOD, Multi-function and CD-ROM), fixed Winchester drives, floppy disk drives, combination drives and more. Most IEM products are available with either an HP-IB or SCSI interface for HP 1000, 3000 and 9000 computers. IEM also offers a number of unique software solutions, including an automated backup and archive program.
Call (303) 221-3005 or (800) 321-4671.

INFORMATION BUILDERS INC.
CIRCLE 247
4GL/DBMS for HP MPE/XL and HP-UX systems offering application development, reporting and decision support. Supported on all major platforms. **Call (212) 736-4433.**

KINGSTON TECHNOLOGY CORP.
CIRCLE 281
Kingston Technology designs and manufactures memory upgrades for PCs, laptops, workstations and laser printers. The Kingston product line also features mass storage subsystems and processor upgrades. **Call (800) 835-2545, FAX (714) 435-2699.**

MINISOFT INC.
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Minisoft 92 for DOS and Windows providing HP terminal emulation and LAN connectivity for just $129.
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NEWPORT DIGITAL CORP.
CIRCLE 246
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O'PIN SYSTEMS
CIRCLE 258
REVEAL from O'PIN Systems solves report distribution problems. Users go "paperless" and view reports directly from PCs or terminals. Saves time and fast payback too!
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PERFECT SOFTWARE
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Perfect Software Solutions is a leading systems integrator, focusing on the HP 3000, HP 9000, networking, client-server computing and other high-impact technologies. We represent best in class hardware, tools and technologies for HP Systems. **Call (800) 741-99HP or (800) 741-9947.**

PERICOM INC.
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Pericom Inc. is a supplier of terminal emulations software for MS-Windows and the X Windows environment. Some of our emulations include DEC VT320-340 and 420, Tektronix color graphic terminals, Prime, Data General, and Tandem. **Call (609) 895-0404.**

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TRYONICS INC.
CIRCLE 477
Tryonics Inc. is a provider of quality remanufactured HP Apollo, Apollo Domain series workstations, spare parts, network and software consulting services.
Call (603) 427-6850.

UNISON SOFTWARE INC.
CIRCLE 499
Unison-Tymlabs is a supplier of networked systems management solutions for both UNIX and MPE. Product areas include workload management, storage management, print automation and desktop integration.
Call (408) 245-3000.

WRQ (WALKER RICHER & QUINN)
CIRCLE 263
Makers of Reflection Series Software. HP terminal emulation for PCs and Macintoshes. **Call (800) 872-2829.**

WESTERN SCIENTIFIC MARKETING INC.
CIRCLE 480
Western Scientific offers a complete line of high-performance peripherals to upgrade and enhance your Sun, Hewlett-Packard, Silicon Graphics, DEC, IBM RS/6000 and Novell workstations. Since 1978, we have been supplying our customers with budget conscious, state-of-the-art technology peripheral subsystems. Using high quality components from premier suppliers such as Seagate, Hewlett-Packard, DEC, IBM, Conner/Archive, Exabyte, Tatung Overland Data/Cipher and Adic. We configure, integrate and test innovative disk, tape optical, RAID, jukebox and memory subsystems to meet your application requirements.
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pins) and package types (QFP, TSOP, SOIC, PLCC, DIP).

Model 2000 programs eight, 16 or 32 bit wide devices in block, interlace, block/interlace or gang operations. It programs gangs of identical devices, sets and even sets-of-sets of devices.

Users can download their new device libraries into local PCs, which then capture the programming algorithms on 3.5-inch disks. It doesn't require any kind of host computer, although an RS-232C port and bi-directional 8-bit parallel ports are provided for file transfer and remote operations.

The Model 2000 standalone device programmer is priced at $1,995. Socket modules are priced from $995.
Contact Bytek Corp., 543 N.W. 77th St., Boca Raton, FL 33487; (407) 994-3520.
Circle 380 on reader card

Pinacl Launches Standalone Bridge

Pinacl Communications Inc. announced the addition of a new standalone local bridge to its family of Ethernet bridges.

Pinacl's 5051-LB is an entry-level solution that overcomes network congestion in medium-size LANs. The bridge easily connects different LAN protocols, such as AUI, BNC or fiber.

The 5051-LB offers LAN interconnections via plug-in cabling media modules. It is fully configurable without any external transceivers or repeaters.

Its ability to plug-and-go eliminates the need for special configuration and it facilitates usage within minutes of unpacking. It also: conforms to IEEE 802.1 rev. D spanning tree protocol; configures for any media, AUI/BNC or fiber optic, without any external transceivers; can be managed by SLIP interface, in-band with MaxiView or any SNMP-based management package, or by a terminal connected to the serial port; has front panel indicators that provide a view of network traffic; and has a versatile mounting system that allows 19-inch rack mounting, wall mounting or standalone.
Contact Pinacl Communications Inc., Cross Westchester Executive Park, 400 Executive Blvd., Elmsford, NY 10523; (914) 345-8155.
Circle 379 on reader card

ICS Electronics Announces VXI-5543D

ICS Electronics Corp. announced a VXIbus Slot 0 controller and embedded computer designed to develop and run programs in a VXIbus chassis. The Model VXI-5543D features solid state, floppy and hard disk drives, multiple RS-232/RS-485 serial ports, a GPIB interface and standard PC interfaces.

The VXI-5543D is a two slot wide, C-size, Slot 0 controller with an embedded PC-style computer for VXIbus systems. It is designed for standalone operation where it controls the instruments in a VXIbus chassis from programs stored in its disk drives or as a remote processor for an external host.

The VXI-5543D has an IEEE-488.2 GPIB interface, three RS-232/RS-485 serial ports, a bi-directional printer port, a VGA video port, an AT keyboard port and a bus mouse port on its front panel. It includes a 240 MB hard disk and a 1 MB solid-state disk for program storage and 4 MB of RAM which is expandable up to 10 MB.

The VXI-5543 includes a bus mouse, a printer adapter cable, an instruction manual and backup software disks. Price is $5,250.
Contact ICS Electronics, 473 Los Coches St., Milpitas, CA 95035; (408) 263-5500.
Circle 378 on reader card

Memory Cards Available In 40 MB Capacity

Verbatim Corp. introduced Flash memory cards in native capacities up to 40 MB, with a doubled capacity of 80 MB due to pre-loaded data compression software. The cards provide instant data access, are compatible with 5 and 12 volt systems and allow data transportability between computers and other electronic platforms.

These Flash memory cards are available in 5, 10, 20 and 40 MB capacities. The Flash mass storage cards don't require a battery to retain data, they consume very little power and therefore extend the battery life of mobile computers and personal communicators.
Contact Verbatim Corp., 1200 W.T. Harris Blvd., Charlotte, NC 28262; (704) 547-6783.
Circle 377 on reader card

Linksys Unveils ParaSCSI Plus

Linksys introduced its ultra high-speed parallel-to-SCSI adapter, the ParaSCSI Plus, that supports up to seven daisy-chained SCSI-I or SCSI-II devices from any standard or Enhanced Parallel Port (EPP).

In addition to accessing multiple SCSI devices, the ParaSCSI Plus pass-through parallel port enables concurrent printing.

The ParaSCSI Plus automatically detects whether a PC has a standard, uni-directional, bi-directional or EPP and configures itself accordingly. ParaSCSI Plus supports products from HP, NEC, Toshiba, Maxtor, Connor, Micropolis, Seagate, Apple, IBM, DEC, Sony, Panasonic, Fusion and Pioneer. It is

compatible with DOS and Windows, with OS/2 support expected soon. Price is $216. Contact Linksys, 16811A Millikan Ave., Irvine, CA 92714; (714) 261-1288.

Circle 376 on reader card

Model 370 LAN Spreader Protects Ethernet Data

Telebyte Technology introduced its Model 370 LAN Spreader for Ethernet LAN systems. A pair of the 10Base-FL devices performs the conversion of the full duplex signals from an Ethernet AUI port to signals compatible with fiber optic cable so a network segment may be extended over a distance up to two km. As an added benefit, this implementation provided total electrical isolation and is impervious to electrical radiation, lightening and surges. The Model 370 provides interface conversion from the full duplex AUI signals to a full duplex fiber optic cable and handles all Ethernet data traffic up to 10 Mbps.

The Model 370 costs $294.

Contact Telebyte Technology Inc., 270 Pulaski Rd., Greenlawn, NY 11740; (516) 423-3232.

Circle 373 on reader card

Cal Com Products Releases 9624VF

Cal Com Products released a voice interactive data/fax modem that combines a 9600 bps send/receive fax modem with a 2400 bps data modem with voice recognition. The internal 9624VF features an auto-detect component that distinguishes between incoming faxes or voice messages.

The 9624VF modem supports a host of standard protocols including V.21 ch2, V.22/V.22bis, Bell 103/212A, V.29 and V.27ter, and is compatible with the Hayes AT Command set with extended commands.

The three- and four-bit ADPCM voice-modem plays messages through its on-board speaker or through an external speaker via a support speaker jack or sound card. It records messages through an attached telephone handset or sound card. Menu-driven SoftKlone software allows for volume control and for saving messages. A voice mailbox is created which can be accessed by two people at once.

The 9624VF costs $199.

Contact Cal Com Products, 181 W. Orangethorpe, Ste. A, Placentia, CA 92670; (714) 961-1888.

Circle 372 on reader card

Extended Systems Supports HP LaserJet 4 Plus Printer

Extended Systems announced its newest ExtendNet card for HP LaserJet printers, including the HP LaserJet 4 Plus printer. ExtendNet ESI-2861A allows HP LaserJet printers to be attached anywhere on a Novell NetWare Ethernet network.

ExtendNet ESI-2861A has Flash memory to ensure updates can be downloaded in the event future NetWare releases require modification. The new card is compatible with all HP LaserJet printers with Modular I/O (MIO) slots and is designed to meet the throughput needs of high-speed printers like the HP LaserJet 4si and 4 Plus printers. Contact Extended Systems, 5777 N. Meeker Ave., Boise, ID 83704; (406) 587-7575.

Circle 369 on reader card

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Let's Get Small

Learn Before You Leap Into Client-Server Application Development

By Gordon
McLachlan

The lure of client-server applications, object-orientation and all the new tools you need for them can be a double-edged sword. If you don't believe me, just ask my friend Ed.

Two and a half years ago, Ed's company decided to build an IBM mainframe-based client-server application. The client portion was to communicate with the mainframe using a 3270 terminal data stream, with gobs of GUI makeup to put a pretty face on it all.

The client side was going to be developed for Windows, but an OS/2 version also was planned. By that time, IBM had convinced itself and a few others, including Ed's company, that OS/2 was a necessary part of the IBM client-server strategy. Of course, that dictated the choice of language and development tools.

While the prototype would be built using Microsoft's Visual Basic, the production code had to be written in something more portable — like C or C++ — to make the OS/2 version easier to implement. At least, in Ed's words, "that was the scam the programmers ran on management."

The project was supposed to be wrapped up in 18 months. The prototype was to be finished in eight months, with the other 10 for production coding. Despite a "typically grandiose spec," the prototype was finished on time. But two months before the beta deadline, the C++ development team announced it was having trouble turning the prototype into production code and would need another three months. According to Ed, "At that point there was nothing we could do about it, so the spec was simplified and the programmers were given the extension they wanted."

WHERE IS PLAN B?

As the second deadline approached, the developers admitted they weren't even close to finishing. And they didn't know how long it would take. Oops! Time for Plan B. But, there was no Plan B — yet.

After a lot of finger-pointing and soul-searching, goosing the Visual Basic prototype into production form looked like the best bet. Maybe the object-orientation and an OS/2 version weren't necessary after all. Just getting done became the priority.

Since that decision was made, and to everyone's relief (except the C++ jockeys), the production code has gone to beta. All's well that ends well. But this one didn't end well. A post-mortem of this project is going to find some common problems that could have been avoided.

It seems the spec included requirements that were relatively unimportant. Portability and object-orientation are politically correct enough, but were either of them really necessary?

With a near 100 percent penetration of Microsoft Windows at IBM mainframe sites, an OS/2 version was probably superfluous. Even if OS/2 had some advantage — like better APIs for communicating with IBM mainframes — the advantage would be lost if the application was truly portable. The APIs can't be used if they don't have equivalents in MS Windows.

UNIDENTIFIED FLYING OBJECTS

Object-orientation also seemed like a good idea, but canned, reusable code is what the project actually needed. Custom VBX controls available in the Visual Basic third-party aftermarket saved the day. It wasn't object-orientation exactly, but it was close enough.

While it's true that C++ objects are reusable, it's also true they need to be developed first. With the paucity of Microsoft Windows object classes available at the time, the project team adopted an "I can write it better than you can buy it" attitude. It's fun to write the code, but it takes a hell of a lot longer.
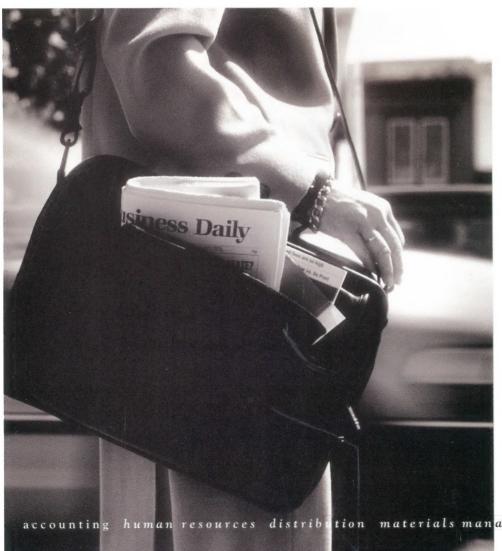
The company also underestimated the learning curve associated with C++ in the Microsoft Windows environment. They had hired "experts" specifically for their supposed C++ expertise, but it turned out they didn't really understand how to code for Microsoft Windows.

What's the moral of this story? Start small. Start slow. And stay low to the ground. A year spent playing with a small project would have saved that much time on the BIG ONE. It's better to spend the time learning, then living through the accidents.

—McLachlan's Internet address:
mclachlan@cardinal.com

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